CONSERVATION STRATEGY FOR SAGE-GROUSE (*Centrocercus urophasianus*) AND SAGEBRUSH ECOSYSTEMS WITHIN THE BUFFALO – SKEDADDLE POPULATION MANAGEMENT UNIT

Northeast California Sage-grouse Working Group

Compiled By
Donald J. Armentrout, BLM
Frank Hall, CDFG

Edited By
Mary Nordstrom, CDFG

July 19, 2006

Citation: Armentrout, D. J., and F. Hall (Compilers). 2005. Conservation Strategy for Sage-Grouse (*Centrocercus urophansianus*) and Sagebrush Ecosystems Within the Buffalo – Skedaddle Population Management Unit. Bureau of Land Management, Eagle Lake Field Office, Susanville, CA

TABLE OF CONTENTS

CHAPTER I INTRODUCTION 5
I.A. Background 5
I.B. HISTORY OF SPECIES CONSERVATION 5
CHAPTER II CONSERVATION STRATEGY 5
II.A. SAGEBRUSH ECOSYSTEMS AND SAGE-GROUSE 5
II.B. BIOLOGICAL OVERVIEW OF SAGE-GROUSE 5
II.C. SAGE-GROUSE POP. MONITORING & ASSESSMENT 5
II.D. CONSERVATION ON PUBLIC AND PRIVATE LANDS 5
II.E. CONSERVATION GOALS, OBJECTIVES, AND ASSOCIATED ACTIONS 5
II. F. DESCRIPTION OF MANAGEMENT ACTIONS 5
II.G. ADAPTIVE MANAGEMENT FRAMEWORK 5
II.H. IMMINENT EXTINCTION CONTINGENCY PLANS 5
II.I. STEWARDSHIP PROGRAM, PUBLIC EDUCATION, AND OUTREACH 5
II.J. MONITORING SCIENCE AND RESEARCH AGENDA 5
CHAPTER III Literature Cited 5
IV. Appendices 5
Appendix A Proposed and Completed Actions for High Priority Habitats 5
Appendix B Biological Methods Section 5
Appendix C Project Review Guidelines 5
Appendix D Summary of Habitat Assessment and Monitoring 5
Appendix E Summary of Lek Counts and Persistence Data 5
Appendix F Land Health Standards. Grazing and OHV Guidelines 5
Appendix G Habitat Restoration Monitoring Data 5
Appendix H Regulatory Authority and Enforcement Guidelines 5
Appendix I Sage-Grouse Lek and Other Habitat Informational Signs for Public Lands and Private Lands 5
Appendix J Survey Protocols and Archival and Annual Data Sheets 5
Appendix K Northeast California Sage-Grouse Working Group and Technical Sub-Committee Members 5
Appendix L Incentive Programs for Sage-Grouse Habitat Enhancement on Private Lands 5
VIII. MEMORANDUM OF UNDERSTANDING/CONSERVATION AGREEMENT 5

V. LIST OF FIGURES

1. Nest and adult loss from leks in relation to overhead lines 30
2. Mean survival by Lek Related to Distance From Overhead Lines 31
3. Adaptive Management Framework Steps 78
4. Timeline of Adaptive Management Actions 80

VI. LIST OF TABLES

1. General ranges of precipitation, elevation and soil depth for sagebrush cover types 18
2. Age and gender composition of sage-grouse harvest, Lassen Management Zones 23
3. Sage-grouse production data, Lassen Management Zones 24
4. Estimated annual turnover of adult sage-grouse, Lassen Management Zones 24
5. Sage-grouse nesting success from wing analysis, Lassen Management Zones 24
6. Harvest history for California and Nevada 25
7. Composition of adult sage-grouse mortality, 1998-2000 Lassen Radio Telemetry Project 29
8. Annual female survival rates and hunting mortality rates, 1998-2000 Lassen Radio Telemetry Project 29
9. Wild Horse and Burro Management Areas 47
10. Leks, active and historical within the Buffalo – Skedaddle Population Management Unit 52
11. Summary of conservation goals 56
12. Adopted ranking of known sage-grouse complexes or leks 62
13. Five year plan for management and monitoring responsibilities 64
14. Mean habitat characteristics of successful, unsuccessful and random sites in Lassen County, California 108
15. Plant species used for successful and unsuccessful nesting 108
16. Preliminary changes in peak male attendance on index leks, 2003 vs. 2004 111
17. Sage-grouse lek counts – 2003 vs. 2004 111
18. Population-lek summary, Buffalo – Skedaddle PMU as of 5/7/2004 112

VII. LIST OF ACRONYMS USED

AML	Appropriate Management Level
BLM	Bureau of Land Management
CA	Conservation Agreement
CE	Conservation Easements
CCI	Cooperative Conservation Initiative
CCR	California Code of Regulations

CCS	Challenge Cost Share
CDF	California Department of Forestry
CDFG	California Department of Fish and Game
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CRHCP	California Riparian Habitat Conservation Program
CRP	USDA Conservation Reserve Program
CS	Conservation Strategy
DM	Data Manager
EQIP	Environmental Quality Incentives Program
ESA	Endangered Species Act of 1973, as amended
FLPMA	Federal Land Policy Management Act
GBH	Great Basin Heritage
GIS	Geographical Information System
HMA	Herd Management area
LCBS	Lassen County Board of Supervisors
LCFGC	Lassen County Fish and Game Commission
LIP	Landowner Incentives Programs (NDOW, USFWS, etc.)
LUP	Land Use Plan
MLRA	Major Land Resource Area
MOU	Memorandum of Understanding
NACO	Nevada Association of Counties
NCCP	Natural Communities Conservation Program
NCSGWG	Northeast California Sage-Grouse Working Group
NDF	Nevada Division of Forestry
NDOW	Nevada Department of Wildlife
NFWF	National Fish and Wildlife Foundation
NRCS	Natural Resources Conservation Service
NRS	Nevada Revised Statute
OHV	Off-Highway Vehicle
PECE	Policy for the Evaluation of Conservation Efforts
PIF	Partners In Flight
PLM	California Private Lands Management Program
RHJV	Riparian Habitat Joint Venture
PMU	Population Management Unit
RMP	Resource Management Plan
S-GSG	Sage-Grouse Stewardship Group
SNPLMA	Southern Nevada Public Lands Management Act
TBD	To Be Determined
TSC	Technical Sub-Committee
UCCE	University of California Cooperative Extension
USDA	United State Department of Agriculture
USDI	United States Department of the Interior
USFWS	United States Fish and Wildlife Service
WAFWA	Western Association of Fish and Wildlife Agencies
WCB	Wildlife Conservation Board

WHIP	Wildlife Habitat Incentives Program
WMSGWG	Washoe-Modoc Sage-Grouse Working Group
WNv	West Nile Virus
WPB	Wildlife Programs Branch
WSA	Wilderness Study Area

CHAPTER I INTRODUCTION

I.A. Background

Sage-grouse (*Centrocercus urophasianus*) is a sagebrush obligate species found in all the western states except Arizona and New Mexico. Breeding populations have declined by 17 – 47% throughout much of its range (Connelly and Braun 1997). The Washington populations, Gunnison subspecies, and Greater sage-grouse species have been petitioned for listing under the Endangered Species Act. To date, the petition to list Greater sage-grouse has been found to not warrant listing by the U.S. Fish and Wildlife Service (Federal Register 2005) because of conservation strategies such as this one. The California Department of Fish & Game considers sage-grouse as a Species of Special Concern and an Upland Game Bird. The Bureau of Land Management (BLM), California and Nevada, considers the sage-grouse a BLM Sensitive Species. Within BLM policy (USDI 2001) the minimum level of protection must be consistent with the policy for protection of candidate species.

Since 1987, the estimated breeding sage-grouse population within the Buffalo - Skedaddle Population Management Unit (PMU) has been between about 1,500 and 4,500 sage-grouse, depending on the year. These estimates are based on expansions of peak males counted on California leks using methods in the published literature. The number of active leks in the California portion of the PMU was 32 in 2004. The last check of active leks in the Nevada portion showed 17 active leks in 1992 with 5 of these active in 1998. Populations fluctuate depending largely on habitat quality and precipitation. Population trend since 1987 has not markedly increased or declined but does cycle considerably.

Areas of the sagebrush ecosystem within the PMU that have the potential to support sage-grouse (1,475,506 acres) have declined over the past 100 years. Approximately 46% of potential habitat (mature sagebrush and seedlings present) understory is dominated by annual grass, annual forbs, bare ground, or 0-9% juniper cover. Approximately 19% of potential sagebrush habitat has crossed the threshold from sagebrush dominated (mature sagebrush and seedlings present) to juniper or annual grass dominated communities (mature sagebrush and seedlings not present).

Concern for sage-grouse prompted the Western Association of Fish and Wildlife Agencies (WAFWA) to up-date guidelines for the management of sage-grouse and their habitats (Connelly et al. 2000). A Memorandum of Understanding (MOU) between the BLM and WAFWA was signed on August 14, 2000 to undertake conservation planning to improve populations, reverse habitat declines, demonstrate the commitment of all involved to the long-term

conservation of the species, and perhaps, to preclude the need to list sage-grouse as threatened or endangered.

The following entities have committed to implementation of the conservation strategy and are signatory to the conservation agreement:

- California Department of Fish and Game (CDFG)
- Nevada Department of Wildlife (NDOW)
- Bureau of Land Management (BLM)
- Lassen County Board of Supervisors (LCBS)
- Lassen County Fish and Game Commission (LCFGC)
- University of California Cooperative Extension (UCCE)
- U.S. Fish and Wildlife Service (USFWS)
- Natural Resources Conservation Service
- Stakeholders

The mission of CDFG is to manage California's diverse fish, wildlife, and plant resources. These are to be managed for their ecological values and for their use and enjoyment by the public.

The mission of NDOW is to protect, preserve, manage, and restore wildlife for their aesthetic, scientific, educational, recreational, and economic benefits to citizens of Nevada and the United States, and to promote the safety of persons using vessels on the waters of Nevada.

The BLM manages public lands in accordance with the Federal Land Policy and Management Act of 1976 (FLPMA), [43 U.S.C. 1701 *et seq*.], as amended through September 1999. Section 102 Declaration of Policy states "*The Congress declares it is the policy of the United States that--… (8) the public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values; that, where appropriate, will preserve and protect certain lands in their natural condition; that will provide food and habitat for fish and wildlife and domestic animals; that will provide for outdoor recreation and human occupancy and use;…"* . Wild horses and burros are managed in accordance with the Wild Free-Roaming Horse and Burro Act of December 15, 1971 [16 U.S.C. 1331-1340].

Through the Lassen County General Plan the Lassen County Board of Supervisors has established Goal L-22 addressing the *Protection and enhancement of important wildlife habitats to support healthy, abundant and diverse wildlife populations.* Policies developed to support this goal are:

LU49 Policy: The County supports the management of wildlife resources in ways that enhance the health and abundance of wildlife populations and the diversity of species and their habitats and which, at the same time,

balance management policies and program objectives with the range of social and economic needs for which the County is responsible.

LU50 Policy: To support and protect the value and viability of areas having significant wildlife habitat resources, including migration corridors, such areas should remain in relatively large parcel units. County zoning and subdivision regulations should protect these resources by not allowing isolated subdivisions intended primarily for residential development (excepted in limited circumstances pursuant to the County's zoning ordinance, e.g., segregation of home sites, parcels created in association with approved use permits, etc.) to be developed in areas which are not specifically designated in the General plan or an area plan for a community development land use (e.g., rural residential) and zoned accordingly.

The Lassen County Fish and Game Commission was reconstituted through Lassen County Board of Supervisor's Resolution 91-44. The duties of the Commission are as follows:

(a) To advise and keep abreast the Board of Supervisors on all policies and programs proposed in Lassen County on fish and game matters; and to recommend appropriate actions to be taken thereto; to investigate and report back to the Board of Supervisors on all matters referred to the Commission by the Board, to maximize the propagation of fish and game within and outside Lassen county.

(b) To advise the Board of Supervisors on State Fish and Game Commission programs and policies affecting Fish and Game in Lassen County.

(c) To work with the State Fish and Game Department on programs affecting fish and game matters in Lassen County. The Commission shall have no administrative authority and cannot expand nor authorize the expenditure of public monies, nor in any manner bind the County to a particular course of action or policy.

(d) To confer with other individuals and/or groups concerning their desires regarding Lassen County fish and game policies and programs.

The University of California Cooperative Extension (UCCE) conducts county-based applied research, education outreach, and other creative activities to help local or regional clientele groups effectively solve problems or improve upon current conditions. UCCE programs are locally driven, but are coordinated regionally and statewide, and are linked with the University's land-grant campuses at Davis, Berkeley, and Riverside. In Lassen County, UCCE provides

academic programs in natural resources, rangeland management, livestock management, weed ecology, and cropping systems.

The U.S. Fish and Wildlife Service is the principal Federal agency responsible for conserving, protecting and enhancing fish, wildlife and plants and their habitats for the continuing benefit of the American people. The Service manages the 95-million-acre National Wildlife Refuge System, which encompasses 544 national wildlife refuges, thousands of small wetlands and other special management areas. It also operates 69 national fish hatcheries, 63 Fish and Wildlife Management offices and 81 ecological services field stations. The agency enforces federal wildlife laws, administers the Endangered Species Act, manages migratory bird populations, restores nationally significant fisheries, conserves and restores wildlife habitat such as wetlands, and helps foreign governments with their conservation efforts. It also oversees the Federal Assistance program, which distributes hundreds of millions of dollars in excise taxes on fishing and hunting equipment to state fish and wildlife agencies.

The Natural Resource Conservation Service (NRCS) puts nearly 70 years of experience to work in assisting owners of America's private land with conserving their soil, water, and other natural resources. Local, state and federal agencies and policymakers also rely on their expertise. They deliver technical assistance based on sound science and suited to a customer's specific needs. Cost shares and financial incentives are available in some cases. Most work is done with local partners. Their partnership with local conservation districts serves almost every county in the nation, and the Caribbean and Pacific Basin. Participation in NRCS programs is voluntary. NRCS's mission is to provide leadership in a partnership effort to help people conserve, maintain, and improve our natural resources and environment with a vision of harmony between people and the land.

I.B. HISTORY OF SPECIES CONSERVATION

Each of the BLM Land Use Plans (LUP) within the PMU, completed during the late 1970's and early 1980's, contained decisions to manage for sage-grouse. In many cases the decisions did not encompass all sage-grouse needs but focused primarily on leks and nesting habitat within a two mile (3.2 km) radius of the lek. This was based on the WAFWA Guidelines in place at that time. These LUPs were developed in coordination with NDOW and CDFG. CDFG and NDOW have monitored sage-grouse populations for approximately 50 years, both before and after the most recent BLM LUP decisions. Little was accomplished in habitat monitoring. The available information was not adequately communicated between agencies until land management agency personnel were asked in 1999, by CDFG, to participate in lek counts. It then became obvious that more coordination and cooperation were needed for successful sage-grouse conservation planning.

California Department of Fish and Game (CDFG):
Sage-grouse have been managed primarily as an upland game bird by the California Department of Fish and Game since the first hunting season was held in northeastern California in 1853. Daily limits were first prescribed in 1901 (25), reduced to 4 in 1911 and reduced to 2 in 1952. The season has been closed intermittently for 31 years since 1931. Since 1987, sage-grouse have only been hunted in a portion of the PMU, hunter numbers have been limited by variable numbers of yearly permits and season length has been 2 days. The take and use of sage-grouse has been regulated under provisions of the California Fish and Game Code and Title 14 of the California Code of Regulations (CCR). As an upland game bird, hunting regulations and monitoring within the CDFG have been administered by the Wildlife Programs Branch (WPB) with data collection primarily by regional staff and Habitat Conservation Program staff. Licensing and permitting has been administered by the License and Revenue Branch of the Department.

The Department's role in sage-grouse conservation efforts are supported primarily through monitoring of populations. The basic data gathered each year include; (1) peak seasonal counts of males on active leks, (2) searches for historic and new leks, (3) determining safe hunting harvest levels at not more than 10% of the estimated fall population based on expansions from males counted on all active leks and, (4) estimates of age, sex and successfully nesting female composition from hunter returned wings. Brood composition data are available for 1957 through 1997 but these data are not currently collected due to statistical problems. These monitoring functions are assisted by other agencies and volunteer staff.

A synopsis of all CDFG monitoring and regulatory data for the conservation of sage-grouse (statewide) was completed as a file report for the Department's Wildlife Programs Branch in 1995.

Nevada Department of Wildlife (NDOW):
The State of Nevada has declared in NRS 501.00, that "wildlife in this state not domesticated and in its natural habitat is part of the natural resources belonging to the people of the state of Nevada", and that "the preservation, protection, management and restoration of wildlife within the state contribute immeasurably to the aesthetic, recreational and economic aspects of these natural resources". NRS 501.105 charges the Nevada Wildlife Commission with the "preservation, protection, management and restoration of wildlife and its habitat." Nevada Division of Wildlife is authorized in NRS 501.331 to "administer the wildlife laws of the state", and NRS 501.337 authorizes the Director of NDOW to "carry out the policies and regulation of the commission.

The State of Nevada regulates the harvest of sage-grouse through its Wildlife Commission and Department of Wildlife on non-tribal lands. Both entities have established a long record of administration and regulation of the sage-grouse hunt. Should upcoming research demonstrate that modifications to existing hunt regulations are necessary, the statutes and regulations are already well in place and will only require modification themselves to reflect new recommendations. Sage-grouse harvest on tribal lands is regulated by tribal governments, which will likely need only to revise current regulations from time to time. No new regulatory mechanisms governing sage-grouse harvest are anticipated.

Bureau of Land Management (BLM): As directed in 43 Code of Federal Regulations (CFR) 4180.1 *Fundamentals of Rangeland Health*, and associated *Standards* (43 CFR 4180.2). The Sierra Front – Northwestern Great Basin Resource Advisory Council (RAC) developed Standards for Rangeland Health and Guidelines for Livestock Grazing that affect how the BLM manages public lands within Washoe County, Nevada outside those managed by the Eagle Lake and Surprise Field Offices. These Standards and Guidelines were approved by the Secretary of the Interior, February 12, 1997. Standards for Rangeland Health (later changed to Standards for Land Health), and Guidelines for Livestock Grazing were developed by the Northeast California RAC for public lands managed by the Eagle Lake, Alturas, and Surprise Field Offices in California and Nevada. These Standards and Guidelines were approved by the Secretary of the Interior July 13, 2000. Bureau of Land Management policy (USDI, 2001) directs the BLM to undertake conservation actions for species not listed under ESA before listing is warranted or the designation of critical habitat becomes necessary. Beginning in 1995 ELFO has gathered basic wildlife habitat data during the Riparian Functional Assessment (RFA), and Land Health Assessment (LHA). These data are now used to determine the land's ability to support biological diversity, including sage-grouse.

Since 2001 the BLM has met regularly with NDOW, and CDFG as part of the Washoe Modoc Sage-grouse Working Group (WMSGWG) to develop conservation strategies for sage-grouse in the Nevada portion of the Buffalo -

Skedaddle PMU. In 2002 BLM and CDFG began working with the Northeast California Sage-grouse Working Group (NCSGWG) to develop a conservation strategy for sage-grouse in the California portion of the Buffalo - Skedaddle PMU. After several coordination meetings with representatives of the public it has been determined this Conservation Strategy (CS) will guide sage-grouse management within the Eagle Lake, Winnemucca, Alturas, and Surprise Field Offices portion of the Buffalo - Skedaddle PMU.

Since work began on this CS the Bureau of Land Management has developed a Draft *BLM Sage-grouse Habitat Conservation Strategy* which serves as a framework to address conservation of sage-grouse habitats on BLM public land. The vision of the national BLM Sage-grouse Habitat Conservation Strategy is to manage public land in such a manner as to maintain, enhance, and restore sage-grouse habitats while providing for multiple uses of BLM administered land. The following five goals will guide BLM's implementation of the national Strategy:

1. Develop a consistent and effective management framework for addressing conservation needs of sage-grouse on public lands.
2. Increase our understanding of resource conditions and priorities for maintaining and restoring habitat.
3. Expand available research and information that supports effective management of sage-grouse habitat.
4. Develop partnerships to enhance effective management of sage-grouse habitats.
5. Ensure leadership and resources are adequate to implement national and state-level sage-grouse habitat conservation and goals.

This CS is part of the state-level tiering described in the National Strategy.

Lassen County Board of Supervisors: In the fall of 2002 the Board provided a representative to the Northeastern California Sage-grouse Working Group who has worked as a member of the Sage-grouse Working Group in the formulation of this conservation strategy.

Lassen County Fish and Game Commission: Since 2003 the Lassen County Fish and Game Commission has stayed abreast of developments concerning the potential listing of sage-grouse, and the progress in developing this CS by providing time in each of the monthly meetings for sage-grouse updates.

University of California Extension: In the spring of 2002, UCCE offices in Lassen and Modoc Counties collaborated with CE colleagues at Oregon State University and University of Nevada to hold a series of educational meetings about sage-grouse conservation throughout the three states. In the fall of 2002, UCCE began working with key agencies and stakeholders in Lassen and

Modoc Counties to form the Northeastern California Sage-grouse Working Group.

U.S. Fish and Wildlife Service: The Endangered Species Act (Act) [16 U.S.C. 1531 *et seq.*] identifies the Secretaries of the Interior and Commerce as the responsible authorities for ensuring conservation for species at risk of extinction. In the States of Nevada and California the United States Fish and Wildlife Service (USFWS) is the primary regulatory authority reviewing conservation efforts to protect species.

In March 2003, a final ruling was published in the Federal Register (2003) outlining the proposed "Policy for the Evaluation of Conservation Efforts When Making Listing Determinations". The purpose of this policy is to ensure consistent and adequate evaluation and formalization of conservation efforts when making listing decisions under the ESA. This policy also facilitates the development of conservation efforts that sufficiently improve a species status so as to make listing a species as threatened or endangered unnecessary. This policy applies to formal conservation efforts developed with or without a specific intent to influence a listing decision with or without the USFWS.
Section 4(a)(1) of the ESA states that USFWS must determine whether a species is threatened or endangered because of the following five factors:
1. The present or threatened destruction, modification or curtailment of its habitat or range.

2. Overutilization for commercial, recreational, scientific, or educational purposes.

3. Disease or predation.

4. The inadequacy of existing regulatory mechanisms.

5. Other natural or manmade factors affecting its continued existence.

Although this language focuses on impacts negatively affecting a species, section 4(b)(1)(A) requires the USFWS to take into account those efforts being made by any State or foreign nation, or political subdivision of a State or foreign nation, to protect such species, whether by predator control, protection of habitat and food supply, or other conservation practices, within any area under its jurisdiction.
Conservation efforts must meet the following criteria:

- ✓ The certainty that the conservation effort will be implemented.
- ✓ Adequate funding, staffing, or other resources to implement the effort as described.
- ✓ Authority of the parties to implement the effort.
- ✓ Authorizations (permits, landowner permission.)
- ✓ Voluntary participation necessary to implement.

- ✓ Regulatory mechanisms (laws, regulations, ordinances).
- ✓ High level of certainty that funding will be provided.
- ✓ Implementation schedule.
- ✓ Approval of all parties.
- ✓ Certainty that the conservation effort will be effective.
- ✓ The nature of threats are adequately described.
- ✓ Explicit objectives for conservation efforts and dates they will be achieved.
- ✓ Quantifiable, scientifically valid parameters to measure progress.
- ✓ Monitor and report progress.
- ✓ Principles of adaptive management are incorporated.

Federal agencies, State and local governments, Tribal governments, businesses, organizations, or individuals should be aware that the ESA mandates specific timeframes for making listing decisions, we cannot delay the listing process to allow additional time to complete the development of a conservation agreement or plan. Nevertheless, we encourage the development of agreements and plans even if they will not be completed prior to a final listing. Such an agreement or plan could serve as the foundation for a special rule under section 4(d) of the ESA which would establish only those prohibitions necessary for the conservation of a threatened species, or for a recovery plan, and could lead to earlier recovery or delisting.

On April 15, 2004 USFWS reached a 90-day finding on three petitions to list the greater sage-grouse. USFWS determined that substantial biological information exists to warrant a more in-depth examination of the status of greater sage-grouse. This finding will commence with a full status review of the species, and once the review is complete, USFWS will determine whether to propose listing the species as either threatened or endangered (Federal Register 2004). USFWS has determined that the petitions and other available information provide substantial biological information indicating that further review of the status of the species is warranted. The information details loss, fragmentation, and degradation of sage-grouse habitat due to wildfire, invasion of non-native plants, livestock management, agricultural conversion, herbicide treatment and mining and energy development, among other causes. The USFWS decision – commonly known as a “90-Day Finding” – is based on scientific information about the species provided in three petitions requesting listing of the species under the ESA.

“It is important to note that our finding regarding these petitions does not mean that the Service has decided it is appropriate to list the greater sage-grouse,” explained Ralph Morgenweck, the Service’s Director of the Mountain-Prairie Region. “Rather, this finding is the first step in a long process that triggers a more thorough review of all the biological information available. This process – which includes a request for input from the public – should be completed within 12 months of receiving the petitions.”

This status review will determine whether or not the greater sage-grouse warrants listing as a threatened or endangered species.

Since June 2000 USFWS has been a member of Nevada Governor Kenny Quinn's committee to develop conservation strategies for sage-grouse population management units in Nevada. Since 2001 the USFWS has provided Utah with $2.4 million and Washington with $730,000 for the restoration of sagebrush habitat. Through its Landowner Incentive Program, the USFWS also provided $1.4 million to Montana to improve the management of sagebrush habitat on private lands there. The Shoshone and Arapaho tribes, on the Wind River Reservation in Wyoming, will use part of a recently awarded $190,000 Tribal Wildlife Grant to monitor sage-grouse populations, develop a management plan for the grouse and its habitat, and enhance the sagebrush ecosystem.

Natural Resources Conservation Service: The Natural Resources Conservation Service (NRCS) is the federal agency that works with private landowners to help them protect natural resources. The Soil Conservation Act of 1935 (Public Law 74-46) established a "Soil Conservation Service" within the U.S. Department of Agriculture. The Soil Conservation Service (later called the Natural Resources Conservation Service) was initially charged with developing and prosecuting a continuing program of soil and water conservation. The Natural Resources Conservation Service has since evolved from an erosion-control agency to one with many natural resource conservation programs. One program of the National Cooperative Soil Survey is the completion of soil investigations in the field and preparing maps of soils that have been identified and classified. A soil survey report accompanies the soil maps which provides information about the soils in the survey area and lists interpretations for each soil in terms of suitability for different uses, i.e., roads, crop production, ponds, etc.

The mission of the NRCS is to help people live on the land in a sustainable way. To meet this responsibility, the NRCS offers technical assistance, voluntarily requested, to ranchers and farmers in the development of conservation systems uniquely suited to their land and particular way of doing business. The NRCS also works with urban and rural communities to curb soil erosion, conserve and protect water supplies, enhance wildlife habitat, and solve other resource problems. Conservation Districts, which are local units of government, are the heart of the NRCS conservation delivery system. Organized by locally elected citizens under state law, conservation district supervisors know the most about local needs. NRCS and conservation districts are bound together by mutual conservation objectives as well as legislation and formal agreements with the Secretary of Agriculture.

Stakeholders: Stakeholders are defined as those parties with an interest in sage-grouse conservation, having management responsibility for either the species or its habitat, or as affected users of lands containing sage-grouse habitat, or as parties expressing concern over the well-being of the species. Stakeholders not presently involved in the Northeast California Sage-grouse Working Group's effort will be encouraged to participate in the local conservation planning efforts, representing themselves or an organizational affiliation. The Nevada Association of Counties (NACO) will facilitate the bringing together of stakeholders and organization of planning teams at the local level in Nevada. Voluntary participation in the local planning process will be considerable – most implementation strategies remain to be created at the local level. Of course, the prospect of a listing of the sage-grouse as either Threatened or Endangered remains a strong incentive for local stakeholders, particularly resource users, to participate in the planning process. Other incentives to resource users and rural communities sufficient to encourage them to implement sage-grouse conservation measures are identified in Appendix L. The Nevada Governor's Team has recommended that the development of incentives be a part of the local planning process, thinking that few are more qualified to develop effective incentives than the affected users themselves.

CHAPTER II CONSERVATION STRATEGY

II.A. SAGEBRUSH ECOSYSTEMS AND SAGE-GROUSE

History

The obligatory relationship between sage-grouse and sagebrush ecosystems becomes more distinct through study of their evolution.

Most researchers believe that the genus *Artemisia* evolved in Eurasia. Mountain big sagebrush (*Artemisia tridentata* ssp*. vaseyana*), the most genetically primitive form evolved during the middle Pliocene Epoch approximately 5 million years before present or earlier. During pluvial times mountain big sagebrush almost had a continuous distribution. During warming and dryer climatic conditions, including into recent times, mountain big sagebrush retreated into mountains and foothills with deep, summer-moist, well-drained soils (Trimble 1989). As the temperature continued to rise, and ancient lakes, such as Lake Lahontan, began to decrease in size and elevation, other sagebrush species began to occupy the lower elevations, out into the valleys. The most dominant big sagebrush species were basin (*Artemisia tridentata* ssp. *tridentata*) and Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*). Wyoming big sagebrush is believed to have evolved from the hybridization of basin big sagebrush, mountain big sagebrush, and black sagebrush (*Artemisia nova*). Chromosomes in the group behave similarly, though one or more extra sets of chromosomes is common. This big sagebrush complex is believed to have evolved during recent times, over the last 11,000 years during the Holocene Epoch (Trimble 1989).

Sage-grouse (*Centrocercus urophasianus*) are strictly Northern Hemisphere genera and a species that probably evolved in North America. Johnsgard (1973) believes that during the late Pliocene Epoch, approximately 2 million years before present or earlier, the extant genera *Centrocercus*, sage-grouse, and *Tympanuchus*, prairie chicken, evolved independently from forest-dwelling genera as arid habitats expanded. During the middle to late Pleistocene, and into the Holocene as the big sagebrush complex was expanding into drier sites sage-grouse probably completed their move from higher elevation mountain big sagebrush ecosystems into the lower elevations of the Great Basin (Trimble 1989).

Sagebrush Ecosystems Today

Sage-grouse range once nearly matched that of sagebrush. Today, sage-grouse inhabit much of that area but in greatly reduced numbers. Abundance of sagebrush within sagebrush communities has increased in some areas but a

pure stand of sagebrush with few grasses and forbs does sage-grouse little good (Trimble 1989).

Floristic diversity in sagebrush steppe communities is usually considered to be moderate (West 1983). Jensen (1989), while evaluating 372 ecological sites in Nevada, encountered 218 species of plants. Thirty-nine were shrubs, 35 were grasses, and 140 were forbs. Within 112 mountain big sagebrush communities in the northern Great Basin, 247 of the total 337 plant species were forbs. Forbs, however, generally account for less than 10% of the total plant cover or biomass in shrub steppe communities (Miller and Eddleman 2001).

Shrub canopy cover desired by sage-grouse changes throughout the year. Shrub cover sought by sage-grouse varies between open, small areas for leks, moderately dense (10-16%) for nesting (Popham and Gutierrez 2003), moderate (10-25%) for brood rearing habitat, and open to dense (10-30%) for wintering (Connelly et al. 2000). Shrub heights preferred for nesting vary between 61-70 cm (24”-28”) total height (Popham and Gutierrez 2003), brood rearing 40-80 cm (16”-31”), and winter habitat 25-35 cm (10”-14”). Shrub cover, density, and height are determined by site factors (soils, climate, etc.), species of *Artemisia*, and past history of disturbance. Fire is a part of sagebrush ecosystems. Canopy cover varies after each fire. Variability is a range of little sagebrush cover to sagebrush dominating the site.

Three subspecies of big sagebrush and two subspecies of low sagebrush are the dominant sagebrush found within the Buffalo - Skedaddle PMU. Where each of these occurs is a product of soil depth, elevation, and precipitation (Table 1). These variations of precipitation, elevation, and soil depth limit the structure, and species diversity within sagebrush communities. This, in turn, limits the sagebrush community’s ability to provide sage-grouse habitat.

Table 1. General ranges of precipitation, elevation, and soil depth for sagebrush cover types found in the Buffalo - Skedaddle PMU (from Miller and Eddleman 2001).

Species	***PPT*** **Mm (in.)**	***Elev.*** **M (ft)**	***Soil Depth*** **(in.)**
Artemisia tridentata tridentata Basin big sagebrush	200-400 (8-16)	<2,300 (<7,546)	deep (30-60+)
Artemisia tridentata vaseyana Mountain big sagebrush	350-450 (14-18)	1,200-3,200 (3,937-10,500)	mod.-deep (20-60)
Artemisia tridentata wyomingensis Wyoming big sagebrush	180-300 (7-12)	150-1,676 (490-5,500)	moderate (20-50)
Artemisia arbuscula arbuscula Low sagebrush	200-400 (8-16)	1,000-3,000 (3,280-10,830)	shallow (5-30)

Artemisia arbuscula longicaulis Lahontan sagebrush	175-350 (7-14)	1050-2000 (3,445-6,562)	shallow (5-30)
Artemisia nova[1] Black sagebrush	200-300 (8-12)	1,400-2,550 (4,593-8,366)	shallow (5-30)

1. Black sagebrush does occur within the PMU but is not a major sagebrush community.

Wyoming big sagebrush occupies the more arid sites and is the dominant sagebrush community in the Buffalo - Skedaddle PMU. This subspecies normally varies between 40 cm-55 cm (16"-22") in height (Tisdale 1994). On highly productive sites Wyoming sagebrush can exceed 80 cm (31"). Tisdale (1994) states shrub canopy cover varies between 5-25%. Higher canopy cover occurs in communities in declining ecological condition containing few perennial herbs in the understory. Goodrich et al. (1999) found that once Wyoming big sagebrush reaches 15% canopy cover herbaceous understory production declines 3.8% with every 1% increase in sagebrush canopy cover.

Welch and Criddle (2003) disagree with the previous statements and contend scientific data does not support statements that a high percent of canopy cover reflects rangeland deterioration. As pointed out by Brackley (2003), Welch and Criddle did not address several important environmental factors when reporting the results of their literature review. These environmental factors include the differences in climate, soils, and ecological site variability across the region occupied by Wyoming big sagebrush communities. The Buffalo - Skedaddle PMU occupies portions of Natural Resources Conservation Service (NRCS) Major Land Resource Areas (MLRAs) 23 – Malheur High Plateau, 21 – Klamath and Shasta Valleys and Basins, and 22 – Sierra Nevada Range. These MLRAs differ in topography, precipitation, and general climate to the extent that ecological site potential between MLRAs is diverse. MLRA 23 makes up the greatest portion of the Buffalo - Skedaddle PMU. Twelve of the 102 ecological sites described in this MLRA are Wyoming big sagebrush sites. Potential differs between these ecological sites because of soil parent material, local precipitation, local temperature ranges, etc. In each case, however, it has been shown by NRCS that as ecological condition declines sagebrush canopy cover increases. Land Health Assessment work performed by the Eagle Lake Field Office since 1999 also indicates that the shift in above ground canopy structure results in a decline of grass and forb understory. Development and implementation of this conservation strategy will, therefore, be accomplished following the work of those whose work was questioned by Welch and Criddle (2003).

High quality nesting cover in Wyoming big sagebrush types occupies the13% portion of cover range (Popham and Gutierrez 2003). Winward (2001) reported that Wyoming big sagebrush communities with a preponderance of sagebrush plants reaching above approximately 60 years of age have outlived their prime

and are in a declining condition. Wyoming big sagebrush communities exposed to no, or minimal, European impact in southeastern Oregon with an intact native herbaceous understory, had a shrub canopy cover that varied between 5-10% on the dry end of its distribution (20 cm (8") ppt). The same communities found on the wet end (30 cm (12") ppt.) of its distribution had a shrub canopy cover of between 13 and 18% (Kindschy 1991). Sites approaching or exceeding 20% shrub canopy usually have been overgrazed and contain depleted understories. In areas of high winter concentrations of deer (*Odocoileus hemionus*) and pronghorn (*Antilocapra americana*) sagebrush cover was <5% (Goodrich et al. 1999). Wyoming sagebrush communities often contain a high percentage of bare ground and sparse but variable forb cover (Tisdale 1994). Perennial forb cover is usually <10% and highly dependent on amount and timing of precipitation (Kindschy 1991).

Basin big sagebrush, normally > 1m (39") tall, is usually found on deep, sandy or loamy textured soils (Miller and Eddleman 2001). Plant cover, like other sagebrush types, is highly variable depending on site characteristics. The shrub overstory can range from fairly open to >30% cover. The understory is usually dominated by perennial grasses with a moderate forb layer. Structure of the herbaceous layer can vary greatly in response to which grass species dominates the site.

Mountain big sagebrush communities usually occupy higher elevation sites than the other two big sagebrush subspecies. These cooler and wetter sites can provide important nesting and brood rearing habitat. Soils are normally moderately deep to deep (Jensen 1989). Shrub canopy cover in undisturbed communities varies between 15-40% but can reach up to 50% in wetter communities with deep loamy soils and north aspects. The shrub layer in mountain big sagebrush communities is typically 80-100 cm (31"-39") tall. A well developed perennial grass and forb layer usually characterizes a mountain big sagebrush community. This cover type, often the most preferred sagebrush type by sage-grouse during nesting (Gregg 1991), can provide excellent nesting cover, and an abundance of succulent forbs. Mountain big sagebrush is not, however, a very commonly used nesting habitat in this PMU, especially when compared with Wyoming big sagebrush. Nesting habitat shrub canopy cover in this type represents the greater than 13% through 16% cover range. The growing season is longer than the other two big sagebrush types, providing succulent forbs later into the summer.

Low sagebrush (*Artemisia arbuscula* ssp. *arbuscula*) is the most common low sagebrush species in northwestern Nevada, and northeastern California. Shrub canopy cover varies between 5 and 25%. Shrub height (30-50 cm (12"-20") and herbaceous production is highly variable within this type. On shallow rocky soils shrub stature does not often exceed 30 cm (12"). Sandberg bluegrass is the dominant herbaceous plant, forb species are usually diverse, and bare

ground is commonly >50% (Passey et al. 1982). On deeper, poorly aerated soils, however, shrub height is closer to 50 cm (20”), bare ground is commonly <50% and Idaho fescue or bluebunch grass usually dominate the understory. Low sagebrush types are often preferred by sage-grouse during winter when availability is not limited by snow depth (Klebenow 1985). In years when snow depth exceeded 25- 30 cm (10”-12”), sage-grouse moved from low stature sagebrush sites into Wyoming big sagebrush community types (Barrington and Back 1984). Greater forb abundance in the wetter low sagebrush communities correlates with preferred use by sage-grouse over Wyoming big sagebrush communities. Low sagebrush can provide excellent habitat for sage-grouse when it forms a mosaic with mountain or Wyoming big sagebrush.

Lahontan sagebrush (*Artemisia arbuscula* ssp. *longicaulis*) has only recently been described (Winward and McArthur 1995). Previously it was referred to as an ecotype of Wyoming big sagebrush. Lahontan sagebrush occupies several thousand acres within northwestern and central Nevada, and northeastern California. It is the second most common low sagebrush found within the Buffalo - Skedaddle PMU. Growth characteristics are very similar to low sagebrush. Lahontan sagebrush can grow in pure stands or in association with Wyoming big sagebrush. Little will be known about its capabilities as sage-grouse habitat until biologists revisit those sites initially evaluated as ecotypes of Wyoming big sagebrush, or low sagebrush, and correct their habitat evaluations for Lahontan sagebrush types. Work performed by the Eagle Lake Field Office Land Health Assessment Interdisciplinary Team has found that these communities resemble low sagebrush communities under the same environmental conditions.

Each sagebrush type has its own set of limitations, and management potential. Sage-grouse found in the Buffalo - Skedaddle PMU are found throughout a variety of sagebrush dominated communities. Younger sagebrush of all species and types is usually more nutritious than older aged plants and can play an important role in both the distribution and pre-breeding condition of sage-grouse on winter ranges.

II.B. BIOLOGICAL OVERVIEW OF SAGE-GROUSE

Genetics

Recent application of molecular analysis using mitochondrial markers from sage-grouse DNA samples has facilitated a better understanding of sage-grouse genetic relationships (Benedict et al 2001 and Benedict et al 2003).

Haplotypes (Clade I and Clade II) are a useful parameter for determining genetic limitations within a sage-grouse population (Benedict et al 2001 and Benedict et al 2003). Percent individuals with novel haplotypes from Lassen and Washoe counties available from the literature include; Lassen 9.5%,

Washoe 10% (Benedict et al 2003) and Washoe 10.5% (Benedict et al 2001). These data were determined mostly from samples collected within the Buffalo - Skedaddle PMU (all of the Lassen samples and an unknown portion of the Washoe samples). When compared with samples from other sage-grouse populations in Oregon, Washington and elsewhere in California and Nevada, the percent of novel haplotypes in the Buffalo - Skedaddle PMU is relatively low. Some haplotypes from this PMU are present in Idaho, Montana and Colorado. This information indicates that there are few genetic limitations that might affect future conservation of sage-grouse within this PMU.

II.C. Sage-grouse Population Monitoring and Assessment

Sage-grouse population trends cannot be effectively monitored without rigorous field inventories of key indicators such as peak male lek counts and recruitment. An important component of this monitoring is standardization of methodology (Connelly et al 2000, 2003). It is unlikely that changes in populations and effects of conservation measures (habitat enhancement or protection) could be evaluated unless some measures of trends of populations are made. Monitoring and assessment are fundamental to conservation evaluations. Refer to Appendix J for more detailed information.

Monitoring trends

Efforts to monitor sage-grouse trends and abundance in the Buffalo - Skedaddle PMU have taken place over the past 50 years. Earlier efforts were often anecdotal or not standardized. Monitoring efforts have become much more standardized in the California portion since 1987. The types of monitoring methods employed in this PMU include:

Leks

Searches and detections of active leks, follow-up surveys for active leks, and counts of males on active leks, ideally for peak male attendance each year, have been the specific lek monitoring efforts.

Lek Locations: Breeding populations cannot be evaluated unless lek locations are known (Connelly et al 2003). Most leks in this PMU were identified between the early 1950s and 1987 by non-standardized or anecdotal detection. At least one lek in this PMU was noted as active in 1937 (Moffitt, unpub. data) and was still active in 2004. Intensive lek searches for both “new” and historically active leks were carried on by helicopter (1998) and by ground surveys for 3 consecutive years beginning in 2000 in the California portion. All surveys and searches in the California portion have identified 162 lek sites through 2004. However, only 32 (20%) of these were known to be active in 2004. Lek locations have been determined by intermittent helicopter surveys in the Nevada portion of the PMU. Thirty-five (35) lek sites have been identified in the Nevada portion which accounts for 18% of a total of 197 known lek sites in the PMU. It is unknown how many of the Nevada leks were active in 2004.

However, only 17 were known to be active since 1990 and an additional 12 were known not to have been active since 1980. Lek searches completed in 2004 will update Nevada lek activity records.

Lek Counts: Almost all active leks known to be present in the California portion of the PMU have been counted for peak male attendance (>/=4 counts) since 1987. However, not every historically active lek site has been checked every year. Only two leks (1%) of 149 leks active before 1987 in the California portion were found to be still active in 2002 and 2003. Most inactive leks now have immediately adjacent habitats that will not support breeding sage-grouse due to conversion to agriculture, loss of adjacent sagebrush, juniper invasion, overhead lines, newer fences, or other habitat changes. A recent estimate of the numbers of active and inactive leks in the Nevada portion of the PMU is not available.

Lek counts have formed the basis of California's estimates of changes in trend since 1987. A portion of these data have been used as "Index or Trend" leks to guide the level of hunting. Index leks were developed from a consistently applied subset (n=13) of the largest active leks within the two California hunt management zones (East Lassen and Central Lassen).

Brood Counts: Brood counts were collected from the California portion of the PMU from the early 1950s through the early 1990s. This information is no longer collected because of difficulties in replication, standardization of samples, and year to year comparisons (Connelly et al 2003**).**

Wing Analysis: Sage-grouse wings collected during September hunting seasons may be used to determine age, gender, and reproductive status of yearling and adult females. This is currently considered to be the most useful technique for assessing sage-grouse production (Tables 2 – 5) (Connelly et al 2003).

Table 2. Age and gender composition (%) of the sage-grouse harvest, Lassen Management Zones, CA

Year	Immatures			Yearlings			Adults			Sample Size
	M (%)	F (%)	Tot.(%)	M (%)	F (%)	Tot.(%)	M (%)	F (%)	Tot.(%)	
2003	47	53	64	0	100	6	36	64	30	83
2002	50	50	47	0	100	7	32	68	47	73
2001	38	63	46	13	88	8	22	78	47	105
2000	75	25	7	30	70	43	44	56	50	110
1999	53	47	50	8	92	5	41	59	45	223
1998	43	57	44	-	-	-	33	67	56	201

Mean	**51**	**49**	**43**	**10**	**90**	**12**	**35**	**65**	**46**	**133**

Table 3. Sage-grouse production data, Lassen Management Zones, CA to 2003

Year	No. Wings	% Young	Chicks/hen	Chicks M:F
2003	83	64	2.52	25:28
2002	73	47	1.21	17:17
2001	105	46	1.07	18:30
2000	110	7	0.13	6:2
1999	223	50	1.59	11:52
1998	201	44	1.19	14:51

Table 4. Estimated annual turnover (%) of adult sage-grouse, Lassen Management Zones, CA.

Year	Males		Females	
	Young	Adults + Yearlings	Young	Adults + Yearlings
2003	30	11	34	25
2002	23	15	23	38
2001	17	11	29	43
2000	5	35	2	58
1999	26	19	23	31
1998	19	18	25	37
Mean	**20**	**18**	**23**	**39**

Since 1998, wing analysis from the California portion of the PMU has included an estimate of nesting success. The average annual nesting success for all females was 51% for 1998 through 2003 (Table 4).

Table 5. Sage-grouse nesting success from wing analysis, Lassen Management Areas

	Adults		Yearlings		All females	
Year	N	%	n	%	n	%
2003	4/12	33	3/3	100	7/15	47
2002	8/23	35	3/5	60	11/28	39
2001	30/38	79	2/7	29	32/45	71
2000	13/31	42	30/30	100	43/61	71
1999	26/59	44	6/11	55	32/70	46
1998	24/75	32	0/0	0	24/75	32
Average	**105/238**	**44**	**44/56**	**79%**	**149/294**	**51%**

Lek count data used in conjunction with wing analysis provides the basis for comprehensive trend and monitoring information for most of the sage-grouse in the PMU (California portion) and constitutes comparative data for inferring

population status. These data will continue to be relied upon for conservation strategies.

Hunting:

Hunting is the most obvious form of direct mortality to sage-grouse populations and one of the easiest to manage. Harvest data for the Nevada portion of the PMU has been estimated from a hunter questionnaire returned from 10% of all upland game hunters and some check station data. Most of the California portion of the PMU has been open to permit only hunting since 1987. For those areas in California where hunting has been open, a permit system with 100% of hunters receiving a questionnaire has been in place. California harvest estimates have been based on returned permits. Prior to 1987, California harvest estimates were based on a statewide questionnaire similar to Nevada's.

Sage-grouse hunting in the California portion of the PMU was closed for 9 years over 3 periods between the 1950's and 1987. The Nevada portion was closed to hunting in 1994 but open in all other years since 1987. Prior to 1987, harvest for most years when hunting was open was about 1,000 to 3,000 grouse in the California portion of the PMU and less than 1,000 in the Nevada portion. Harvest since 1987 has averaged between about 200 and 700 sage-grouse per year within the Buffalo – Skedaddle PMU. Most of this has taken place in the California portion and year to year variation largely follows changes in the numbers of permits issued (Table 6, below).

California adjusts the numbers of hunting permits annually within two hunting zones in this PMU. An index from leks counted each spring (peak male attendance) is used to determine annual trends, changes in abundance, and permit numbers. In the California portion of the PMU, the total harvest has been regulated each year based on an estimate of changes in abundance from lek counts. The assumption has been made that the numbers of males counted (peaks) on leks cannot increase or decrease without a corresponding change in the breeding population of sage-grouse. The numbers of males counted on leks does not include females and males not attending leks. The males counted on leks are about ¼ to 1/3 of the estimated breeding population. Annual production from nesting usually increases the fall population to at least double the breeding population based on wing surveys (Table 4). Males counted on index leks, permits issued and estimated harvest have been closely associated (Table 6).

Table 6. Harvest history for California and Nevada

Year	Males on Index Leks (peak) (California)	Permits Issued (California)	Estimated Harvest (California)	Estimated Harvest (Nevada)	Total Estimated Harvest
2003	333	140	138	nd	nd
2002	316	140	106	51	157
2001	569	275	206	59	265

2000	582	400	237	122	359
1999	653	425	462	68	530
1998	602	425	351	67	418
1997	591	400	252	84	336
1996	366	350	330	146	476
1995	469	350	215	92	307
1994	487	350	298	ns	298
1993	336	250	193	113	306
1992	537	250	197	39	236
1991	798	400	253	364	617
1990	790	400	436	291	727
1989	455	400	485	219	704
1988	346	400	443	236	679
1987	221*	400	362	220	582
AVG. (1988-2001)	**514**	**339**	**292**	**145**	**437**

nd = no date or data not yet available
ns = no season
* = incomplete counts

California's sage-grouse hunting seasons have been 2 days with a daily and season limit of 2 birds since 1987, starting on the second Saturday in September since 1999. Recent Nevada seasons have been 16 days (3 weekends) beginning in mid-October with a daily limit of 2 grouse and a season limit of 4. Nevada has not limited total harvest. However, Nevada's harvest has been low relative to California's, primarily due to inaccessibility, larger sage-grouse populations in other nearby PMU's, seasons overlapping with other more desirable species, and lower hunter populations than California. Sage-grouse hunting in Nevada is closed to non-residents which also acts to limit yearly hunting harvest.

Hunting seasons in Nevada were moved to October to reduce harvest of the female segment of the population. For similar reasons, California's season was moved to the second weekend in September. Hunter success generally declines as seasons are moved to later in the fall and female percentages of total harvest usually declines as seasons are moved later. Overall harvest rates are targeted to be less than 10% of the fall population in both states, consistent with WAFWA Guidelines. However, without an annual index of abundance from lek counts in Nevada, harvest rates from the Nevada portion are not known. Hunter collected wings from both states are analyzed each year for age, sex and nesting success of females. This provides annual monitoring data on harvest of females and young.

Sage-grouse populations throughout the Buffalo–Skedaddle PMU are considered to be contiguous. This is based on following movements of 79 sage-grouse fitted with radio transmitters from the California portion 1998-2000. Approximately 50% of these grouse used Nevada winter ranges. None of the radio marked birds left the PMU during the study. Approximately 10% of the sage-grouse range in the California part of the PMU (areas with small, isolated populations) is closed to hunting. It is possible that some sage-grouse in the northeastern part of the PMU leave it for part of the year. Additional small, isolated populations exist in California, especially north and west of this PMU. However, these populations are also closed to hunting and are included in the separate California Lassen-Modoc PMU Conservation planning process.

A primary method of monitoring trends or changes in populations is the annual peak counts of males on each active lek. California has completed these counts each year since 1987. In addition, historic and not recently checked leks should be monitored for presence-absence at least once every 3rd year. Active leks should be counted for peak male attendance at least 4 times each season. In addition, estimates of female nesting success from wings are used to monitor annual nesting success in both California and Nevada. Maintaining limited hunting opportunities is the most efficient way of obtaining a sample of wings to monitor the composition of young and nesting female success, provided harvest does not exceed recommended guidelines.

A yearly estimate of sage-grouse hit but not retrieved by hunters is made from California's returned permits and questionnaires. Monitoring of 79 sage-grouse fitted with radio transmitters from the California portion during the 1998-2001 hunting seasons provided an independent check on both harvest levels and crippling loss. Data from both these sources indicated the numbers lost from this risk are considered negligible.

Both California and Nevada Wildlife Protection Officers routinely patrol throughout the PMU. As with crippling loss, radio telemetry data showed no poaching losses of any of the 79 marked grouse 1998-2001. While there is some anecdotal information that a few sage-grouse may be taken illegally, there is no evidence that any more than rare illegal take of sage-grouse occurs within the PMU.

Patterns of Persistence and Presence:

While no data are available to speculate about original or early historic grouse populations within the Buffalo - Skedaddle PMU, we know that the most essential breeding component (leks) have undergone a decline of greater than 80% since the 1950s. Many of the reasons for the loss of these leks are obvious. Loss of adjacent and essential sagebrush components to fire and conversion to agriculture, overhead power and telephone lines, fence construction, juniper invasion and increasing distribution of cheat grass and

other non-native annuals are among these obvious changes which have accompanied loss of breeding populations. Increases in fire frequency and acres burned within the PMU (BLM 2003, unpub. data) are pervasive threats to Wyoming big sagebrush habitats in the PMU.

The possibility of enhanced sage-grouse populations must start with protection of existing quality habitats, especially active leks and adjacent nesting habitats. Identifying conservation actions which direct where and when priority restorations and enhancements will take place are covered in subsequent sections of this Conservation Strategy.

Predation, Production and Survival:

Predation is an on-going and widespread phenomenon for sage-grouse populations. All sage-grouse eventually die from some cause and being killed by a predator is among the most common and visible forms of mortality. However, predation is no more significant than any other mortality factor unless it limits (or controls) the size of a population.

Predation rates are generally higher if habitat quality has been degraded. For example, nest failure rates from predation are higher if screening grasses are too low to adequately hide eggs. Similarly, overhead lines constructed close to leks may introduce perches and/or nest sites for raptors, eagles and ravens that can severely impact adult sage-grouse and nests. Aldridge and Brigham (2002), Braun (1998), Braun et al. (2002), Knock et al. (2003), and USDI (2003) indicate that the presence of raptors, such as golden eagles, perching on overhead lines cause cessation of strutting on those leks in sight of the overhead lines or structures. The sight of an overhead line or structure within the viewshed of the lek will result in cessation of strutting and potential abandonment of the lek. Preliminary research does indicate this is a highly adverse impact. Conservation measures in the past have been too little to prevent reductions in use, or lek abandonment.

In these degraded habitats, predation is likely limiting the population. However, it is unclear if the cause and effect relationship points to “habitat” or “predation” as the larger problem even in these more dramatic examples.

Sources of adult mortality, including predation and hunting, were evaluated (where possible) from the 1998-2000 Lassen radio telemetry project. Most mortality sources could not be identified due to rapid scavenging (or multiple scavengers) which made predator and scavenger identification impossible. Where sources of predator mortality were determined, golden eagles, coyotes, and bobcats accounted for 10%, 4%, and 2%, respectively, of the known predator losses (Table 7). However, sample sizes were very small and unknown mortality factors accounted for about 3/4ths of all mortality.

Table 7. Composition of adult sage-grouse mortality, 1998-2000 Lassen radio telemetry project

Probable Mortality Factor	Males (n=12)		Females (n=37)		Total (n=49)	
	n	%	N	%	N	%
Unknown	8	67%	28	76%	36	74%
Golden Eagle	3	25%	2	5%	5	10%
Coyote	0	-	2	5%	2	4%
Bobcat	0	-	1	3%	1	2%
Hunting	1	8%	4	11%	5	10%

Connelly et al. (2000) (thresholds) for predator control are based on monitoring nest success and annual survival of adult females for small, isolated and declining populations. Predator control programs may be of particular benefit where good quality habitats have been reduced or while habitat is recovering. Annual female survival rates (Table 8) from the 1998-2000 Lassen radio telemetry project are shown below.

Table 8. Annual female survival rates and hunting mortality rates, 1998-2000 Lassen radio telemetry project.

	1998		1999		2000		Total	
	n	%	n	%	n	%	n	%
Marked	20		36		46		102	
Non-hunt mortality	4	20%	13	36%	16	44%	33	32%
Hunting mortality	1	6%*	1	3%*	2	6%*	4	5%*
Total mortality	5	25%	14	39%	18	39%	37	36%
Annual Survival	15	75%	22	61%	28	61%	65	64%

* Hunting mortality is expressed here as a percentage of the number of marked birds taken during the hunting season from the pre-hunt population, not those taken from the original marked population. For example, in 1998 there were 20 grouse marked by April but 16 remaining at the start of hunting in September. Calculated hunting mortality was 1/16 (6%) not 1/20 (5%).

The average annual female survival rate from the radio telemetry project was 64% which exceeds the WAFWA guideline of <45% for predator control.

Data available for the Buffalo - Skedaddle PMU does not show that predation is limiting the size of the population. However, data from the 1998-2000 California telemetry study does show that both nests and adults from leks closest to overhead lines are lost at a higher rate to avian rather than mammalian predators. These effects were detectable at up to 20+ km (12+ miles) from leks (Figure1).

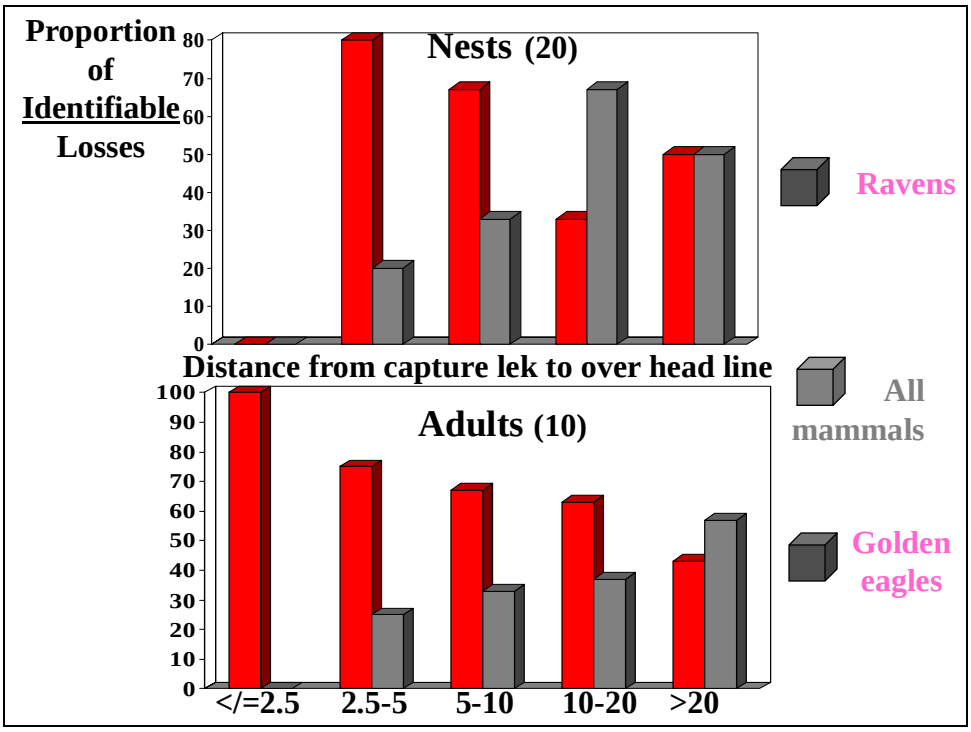

Figure 1: Nest and adult loss from leks in relation to overhead lines.

These data imply that some advantage for avian predators is introduced by the presence of overhead lines and towers, most likely as perch sites for golden eagles (adult grouse losses) and as nest and perch sites for ravens (sage-grouse nest and chick losses).

Losses of chicks from most broods begin at hatching. As broods disperse and travel to forb and insect rich sites, mortality for individual chicks takes place from a variety of causes, including predation. These losses can limit the population if too few young are recruited to replace adult mortality over time. Too few data exist to indicate that this is or is not occurring in the Buffalo - Skedaddle PMU. Based on recruitment rates observed from the composition of young of the year in fall from wing samples, risks from both avian and mammalian predators are considered low in this PMU. Based on proportions of nest losses to ravens (55%) and all mammals (45%) from the Lassen telemetry project, avian predators should be considered of slightly more concern than mammals as nest predators in this PMU.

Information from the 1998-2000 California telemetry study indicated that adult sage-grouse losses were higher to avian rather than mammalian predators (Figure 1). This is consistent with research reported by Aldridge and Brigham (2002), Braun (1998), Braun et al. (2002), and Knock et al. (2003) that the presence of raptors, such as golden eagles, perching on overhead lines cause cessation of strutting on those leks in sight of the overhead lines or structures. The sight of an overhead line or structure within the viewshed of the lek will result in cessation of strutting and potential abandonment of the lek. Golden

eagles were the primary predator, especially near leks, and were the only source of predator mortality determined for marked male sage-grouse. The data also showed that mean survival of adult sage-grouse increased as distance from leks to overhead lines and towers increased. These effects were detectable at up to 20+ km (12+ miles). This is consistent with the role that lines and towers can play as perches and nest sites for golden eagles and ravens, respectively. However, these data do not indicate that these losses may be limiting the population except near (</= 5 km; 3 miles) existing overhead lines and towers (Figure 2).

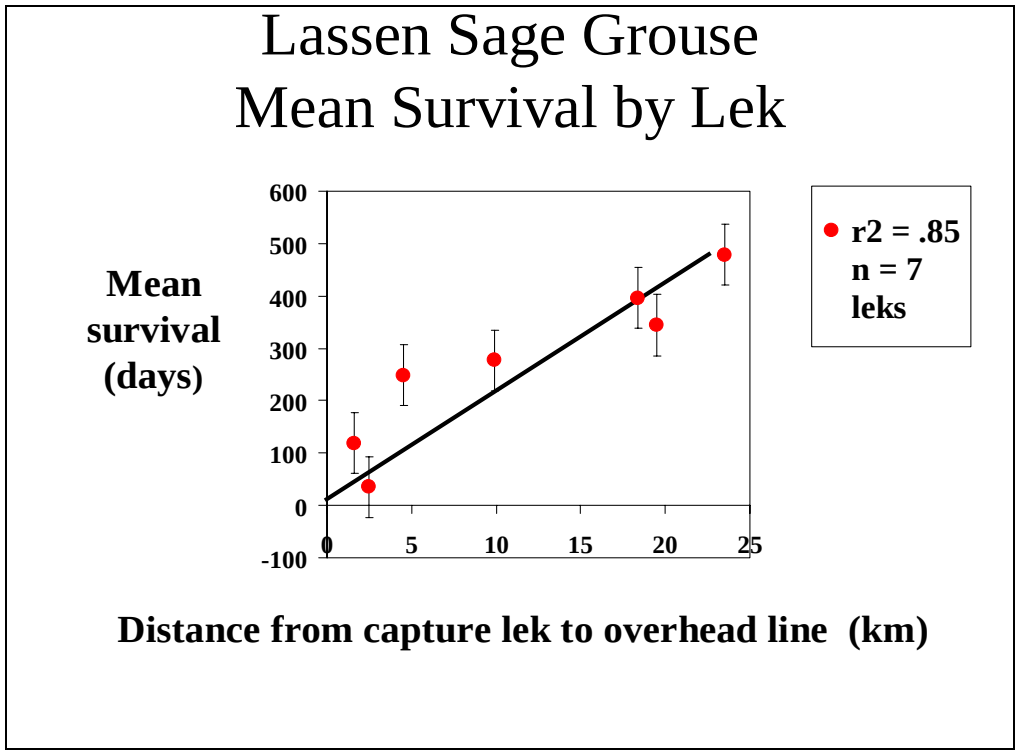

Figure 2: Mean survival by lek in relation to overhead lines

The Number and Size of Populations:

Sage-grouse populations in the Buffalo – Skedaddle Population Management Unit (PMU) are fairly well understood, especially in the California portion and in relation to adjacent populations. The fundamental unit of monitoring data that provides the best information on population status is peak male attendance at leks. Coupled with the number of active and inactive leks, an estimate of the total population can be made which provides the highest quality information available for both trends of population and absolute numbers.

Since 1987, the estimated breeding sage-grouse population within this PMU has been between about 1,500 and 4,500 sage-grouse, depending on the year. These estimates are based on expansions of peak males counted on California

leks using methods in the published literature. The number of active leks in the California portion of the PMU was 32 in 2004. The last check of active leks in the Nevada portion were 17 in 1992 and 5 of these were active in 1998. Populations fluctuate depending largely on habitat quality and precipitation. For example, the highest recent breeding population was in 1990 but the population almost doubled between 1996 and 1999 based on California lek data. Population trend since 1987 has not markedly increased nor declined but does cycle considerably. This suggests that potential risks from predation and hunting, for example, have not had a recent significant impact on population trend.

Grazing:

Connelly et al. (2000) concluded *there is little experimental evidence linking grazing practices to sage-grouse population levels. However, grass height and cover affect sage-grouse nest site selection and success. Thus, indirect evidence suggests grazing by livestock or wild herbivores that significantly reduces the herbaceous understory in breeding habitat may have negative impacts on sage-grouse populations.*

The entire discussion of grazing impacts applies equally to livestock, and wild horses and burros. Limiting season of use and distribution of wild horse and burro uses is not consistent with the regulations for managing wild horse and burros. Wild horses and burro are to be afforded a free roaming status, limited as little as possible by fencing, and their use of the land is year round. Appropriate Management Levels (AMLs) have been set for the Buffalo - Skedaddle PMU through the BLM's land management planning process. The management tool for maintaining AMLs is removal of wild horses and burros from the land when it is shown that their numbers have led to ecological imbalance. Wild horses and burros are also removed from burned areas to facilitate recovery of the burn to an appropriate level of land health. Limited funding within the BLM's wild horses and burro program combined with an average 17% overall recruitment rate confounds the ability of the agency to maintain a healthy ecological balance.

Miller and Eddleman (2001) report that poor livestock grazing practices can have a huge negative impact on sage-grouse habitat. Probably the most significant long-term adverse impact of excessive livestock grazing on sage-grouse is the degradation of sagebrush, meadow, and riparian communities. Poor grazing practices change the proportion of the shrub, grass, and forb structural groups, increase opportunity for invasion and dominance of introduced annuals, shorten the growing season, and can cause an overall decline in site potential through loss of topsoil. A decline in site condition often decreases the ability of soils to capture, store and release water causing sites to become more arid. This in turn provides less green plant material for shorter

periods of time. Excessive grazing also increases the potential of direct competition between livestock and sage-grouse.

Grazing management practices, which maintain the integrity of sagebrush communities can have positive, neutral, or negative impacts on sage-grouse habitat. Season, duration, distribution, and intensity of use, as well as class of livestock will determine the effects of grazing on sage-grouse food and cover. Plant composition and structure at the community and landscape levels will also effect potential interactions between livestock and sage-grouse. Spatial and temporal heterogeneity of the landscape will effect length of the growing season, re-growth following herbage removal, herbage abundance, and grazing distribution. Topography, size and shape of pastures, and distribution of salt and water will also influence grazing distribution. All of these factors must be considered when developing grazing management plans sensitive to sage-grouse habitat requirements (Miller and Eddleman 2001). Grazing management plans will be designed to address site specific issues.

Diet overlap between cattle, wild horses and burros, and sage-grouse under moderate grazing is minimal since cattle graze primarily on grass rather than forbs. The potential, however, for diet overlap with sheep is considerably greater. The spatial distribution of use by livestock and sage-grouse will influence the relationship between these animals.

Season of use by livestock also influences use in uplands versus adjacent riparian areas. If availability of succulent forbs is an objective, early use might be considered. Several studies have reported grouse prefer meadows grazed by cattle over ungrazed meadows early in the spring (Neel 1980, Klebenow 1985). Evans (1986) reported birds did not select for grazed or ungrazed meadows in mid-summer but selected for grazed areas in late summer. Attraction to grazed meadows during late summer was attributed to delayed phenological development. Evans (1986) also reported grazing increased the abundance of succulent leaves favored by grouse. The season and duration of grazing can influence phenology, leafiness, and re-growth of plants. However, overgrazing of meadows can lead to a shortening of the growing season through an increase in meadow desiccation and loss of palatable food plants for sage-grouse.

When developing grazing plans for areas used by sage-grouse, it is extremely important to identify potential conflicts between sage-grouse and livestock, and spatial and temporal heterogeneity of the management unit. Management solutions will vary if the problem is habitat degradation, season of use, stocking rates, or animal distribution. Most of these problems can be solved with sound creative management (Miller and Eddleman 2001).

Disease

The most likely disease threat to sage-grouse throughout North America, including in the Buffalo - Skedaddle PMU, is currently likely to be West Nile virus (WNv). This virus has rapidly spread west across North America, infecting and killing wild and domestic birds, horses, humans, and other animals (Center for Disease Control and Prevention, e-com., 2004). Some groups of birds, especially corvids, raptors, and sage-grouse appear to be particularly susceptible. Outbreaks of WNv in sage-grouse have been detected in Wyoming, Montana and Alberta (Walker et al, 2004). As of September 1, 2004, WNv has also been reported from sage-grouse in Colorado and Mono County, California (S. Gardner, pers. com.). Mosquitoes are the primary vector of WNv.

Mortality of wild sage-grouse to WNv has been reported to average about 25% (Walker et al, 2004). No serum antibodies were detected from a sample of 112 individual sage-grouse from four populations in Wyoming, Montana and Alberta. In addition, sage-grouse reared in captivity and exposed to WNv have been shown to suffer 100% mortality. Similarly, 100% mortality levels were shown within 48 hours in live sage-grouse exposed to carcasses of sage-grouse killed by WNv (Dave Naugle, pers. com.). As of August, 2004, positive cases of WNv had been confirmed in horses, humans, and/or birds within 80 to100 miles of the Buffalo - Skedaddle PMU, near Reno and Carson City, Nevada and most of the Central Valley of California (UC Davis Center for Vector borne Diseases, e-com.). During September of 2004 West Nile virus was found to be responsible for the death of a raptor in Lassen County inside the PMU.

Similar to WNv spread in Wyoming and Montana, the period when frost free conditions permit a rapid expansion of adult mosquito populations will likely be July and August of each year. Detecting when WNv may enter the local sage-grouse population will be problematic. There is little likelihood that WNv will be detected in eastern Lassen and western Washoe county sage-grouse range from public recovery of high risk bird species such as ravens and magpies due to low human populations and remoteness. Because WNv antibody formation in sage-grouse is virtually unknown, blood samples from captured, recovered or hunter-shot birds may not definitively detect WNv presence or absence. One potential source of information regarding WNv presence in this PMU may come from wild horse and burro blood samples. While these animals also have low immunity, low antibody production and low survival expectations (+/- 30% for non-immunized domestic horses; California Health Services, e-com., 2004), large numbers (n>/= 400 to 600) of blood samples from local BLM wild horse and burro captures may be available in future. This could provide sufficient samples that could potentially provide a geographic basis to track any spread of WNv in local sage-grouse range.

Stochastic disease events in wild birds that result in rapid and widespread mortality of continental populations, such as sage-grouse, are relatively rare. Low seropositive rates for neutralizing antibodies are also rare in wild birds. However, if the assumptions that sage-grouse in this PMU may become rapidly infected and suffer widespread mortality are correct, the obvious next challenge will be "what can be done?"

It is clear that if lek counts suffer drastic reductions by April of a given future year, the damage to the population took place the previous summer. Any hope of limiting disease spread would rest on mosquito control (the primary vector) and that control would likely be the only possible option over +/- 1.5 million acres. With no mosquito control throughout Lassen and northern Washoe Counties currently underway for humans or domestic animals, it is unlikely the general public would consider sage-grouse (or wild horses and burros) a high priority. However, mosquito sources in free water and meadows throughout the PMU occupy only a small percentage of the total area. That these areas largely exist on private property will be a separate issue. The areas of commercially irrigated alfalfa are few but can be very large localized mosquito sources. Unfortunately, these forb rich sites (meadows and alfalfa) are precisely where a large percentage of sage-grouse concentrate during July and August in this PMU.

The spread of WNv, its detection, impacts to sage-grouse, and any possible control may be devastating when compared to all other conservation issues for sage-grouse. Only time will tell if there will be any resolution to this issue.

WNv was detected in four dead sage-grouse in Mono County, California in September 2004. (California Health Services 2004).

Translocations

A discussion of requirements for translocations of sage-grouse within the PMU is in Appendix H.

Sagebrush Ecosystem Health, and Condition as it Relates to Sage-grouse

Sagebrush ecosystem health in relation to sage-grouse requires a discussion of multiple steady states. Margalef (1969) reasoned that if stability is resistance to change imposed by external forces, then a system is stable if it returns to the original steady-state after being disturbed or deflected. An unstable state does not return to the original level after disturbance but rather crosses a "Threshold" and continues to be deflected toward some new state (Hurd and Wolf 1974). The discussion of multiple steady states: *A plant community that is resistant to change, remaining or returning to its current state following disturbance. However, a major disturbance(s) may change it to a new steady state, in which*

the community will not return to its former steady state even if the disturbance is removed (Westoby et al. 1989, Laycock 1991) did not begin in range management until approximately 1988 (Friedel 1988, 1991).

Lower successional steady states are common in the sagebrush-grass type which covers at least 81% in the Buffalo - Skedaddle PMU. Original sagebrush communities probably consisted of a fairly open stand of sagebrush with a productive understory of grasses and forbs (Laycock 1978). Periodic natural fires would have temporarily reduced the amount of sagebrush in local areas. Sagebrush types have apparently not been subjected to heavy herbivore grazing pressures since the Pleistocene (Young et al. 1976). When large numbers of domestic herbivores were introduced in the late 19th century, the palatable herbaceous plants were not able to withstand the grazing pressure (Young et al. 1979). Heavy grazing during the short growing season caused rapid deterioration of the understory species and sagebrush increased. Thus a threshold was crossed into steady state dominated sagebrush (Laycock 1991).

Examples, on the ground and in the literature, indicate that once stands of sagebrush (especially the various subspecies of big sagebrush) become dense with a reduced understory, the sagebrush can dominate a site for very long periods. Robertson (1971) found that 30 years of protection from grazing on an eroded sagebrush-grass site in northern Nevada resulted in increased vegetal cover of all life forms, including sagebrush. Sagebrush made up 68% of the total plant cover at the end compared to 64% at the beginning of the period.

The dominance of sagebrush represents a stable state which resists changes in livestock grazing management to move it across the threshold, possibly toward a grass/sagebrush state. We need to identify and understand the factors which can force a stable community across a threshold into a transitional phase moving it toward another stable state. Most of the stable state communities in North America appear to involve either a change in fire frequency or introduction of an alien species in addition to other factors such as grazing (Laycock 1991).

A major change in fire frequency may be one the factors preventing a community from re-crossing a threshold. Fires in Wyoming big sagebrush communities with cheatgrass in the understory (R-4), can result in the cheatgrass beginning to dominate the understory if the burn is not aggressively revegetated. With the finer fuels produced by cheatgrass can come a higher frequency of fire which continues the development of a cheatgrass dominated site, pushing the sagebrush/grass community across the threshold to an annual grass dominated site (X-4).

The major factor for the increase in juniper woodlands is a decrease in fire return intervals (Miller and Tausch 2001). Other factors supporting the increase include historical grazing patterns that reduced the buildup of fine fuels needed

to carry fire, and potentially increases in global carbon dioxide concentrations and climate change (Miller and Rose 1999, Miller and Tausch 2001). As shrub steppe communities are converted to juniper woodlands, community structure, composition, function, disturbance patterns, and wildlife habitat are altered. During the early phases of woodland development, transition is easily reversed with fire (R-3) (Miller et al. 2000). Juniper cutting is also effective at reversing the transition (Bates et al. 2000). As community structure changes during woodland development, management options also change. Crossing an ecological threshold from shrub steppe to woodland not only results in a significant reduction in the role of fire, but may also result in loss of native plant species and loss of soils (X-3) (Miller et al. 2000). Once the threshold from shrub steppe to woodland is crossed, cutting of juniper becomes more feasible than the use of fire to help remove juniper competition (Bates et al. 2000). Any treatment at this stage, however, would have to be accompanied with revegetation of the site using local native species.

The 1,475,506 acres of sagebrush complexes within the Buffalo - Skedaddle PMU have been rated based on their ability to respond (R-Value) positively to management with the following constraints. These R-value categories were developed initially by the BLM in Idaho and adapted through coordination between the Nevada State Office and the Eagle Lake, Winnemucca, and Surprise Field Offices for use in this conservation strategy effort. The BLM in Idaho has since developed a finer scale for describing their habitat. For development of the Buffalo - Skedaddle PMU Conservation Strategy we will continue to use the "R" Values listed below in order to provide a broad assessment of existing and potential sage-grouse habitat within the PMU.

R0 – 124,120 acres (8.4%)

Areas with desired species composition which have sufficient, but not excessive, sagebrush canopy and sufficient grasses and forbs in the understory to provide adequate cover and forage to meet seasonal needs of sage-grouse (nesting, early brood, summer, and fall/winter).

R1 – 323,966 (22%)

Areas with potential to produce sagebrush plant communities that have good understory composition of desired grasses and forbs, but lacks sufficient sagebrush canopy.

R2 – 66,275 acres (4.5%)

Areas with potential to produce sagebrush plant communities that have a sagebrush overstory, but lack sufficient herbaceous understory.

R3 – 4,251 acres (0.3%)

Areas with potential to produce sagebrush communities that have not crossed the threshold to becoming juniper woodlands but are in various stages of becoming dominated by juniper (mature sagebrush and seedlings present).

X3 – 97,226 acres (6.6%)

Areas which have crossed the threshold from sagebrush plant communities (sagebrush seedlings absent) into juniper woodlands.

R4 – 684,627 acres (46%)

Areas with potential to produce sagebrush communities (mature sagebrush and seedlings present) but whose understories are currently dominated by annual grass, forbs, or bareground.

X4 – 175,041 acres (12%)

Areas that have crossed the threshold from sagebrush communities (seedlings absent) into annual grasslands, forbs, or bareground.

1,475,506 TOTAL ACRES OF POTENTIAL SAGEBRUSH HABITAT IN PMU

These acreages indicate that slightly more than 46% (R-3 and R-4) of the PMU currently has a high percentage of cheatgrass or juniper invasion. Approximately 19% (18.6% X-3 and X-4) of the sagebrush ecosystem within this PMU has crossed a threshold to being dominated by cheatgrass or juniper.

II.D. CONSERVATION ON PUBLIC AND PRIVATE LANDS

Private Lands

Any meaningful conservation strategy for sage-grouse in the Buffalo - Skedaddle PMU must include measures that apply to private lands. Regulations and management guidelines applied to public lands cannot be expected to be implemented on adjacent private lands without substantial economic incentives for private owners. Even with such incentives, it is unlikely that conservation measures would take the same form or be as consistently applied due to the desires of individual owners.

Important seasonal habitats for sage-grouse within the PMU do not occur in the same proportions on private lands as they do on public lands. Most of the better and more accessible soil and free water sites within the PMU are on private lands. Most of the sage-grouse winter range and breeding sites are on public lands. By contrast, most of the late brood rearing and forb – rich summer habitats are on private lands, often as crop land or irrigated pasture.

The majority of traditional private land economic uses in the PMU include grazing for both sheep and cattle, agricultural crops, primarily as irrigated alfalfa and irrigated pasture. Eight (8) of the 32 active leks (2004) in the California portion of the PMU are on, or immediately adjacent to, private land. Similarly, two (2) Nevada leks are on, or immediately adjacent to, private land. Virtually all of these lek sites are subject to livestock and/or wild horse grazing but these are not necessarily incompatible uses. In many cases, ungulate grazing may be helping to maintain an open visual aspect needed for continued lek display sites and breeding. However, leks are linked to important adjacent nesting habitats in which grazing can play a larger role in reducing screening cover for nest sites.

Late summer brood rearing sites are commonly on private lands within this PMU, especially in the California portion which has higher precipitation and more agricultural land. Sage-grouse commonly seek forbs and insects in irrigated pastures and alfalfa in late summer. Especially important sites are in the Secret Valley and Madeline Plains areas. Detailed descriptions of incentive programs for sage-grouse habitat enhancement on private lands are provided in Appendix L.

Public Lands

Conservation on public lands is policy driven pursuant to the ESA which means use of all methods and procedures necessary to improve the status of federally listed species and their habitats to the point where the provisions of the ESA are no longer necessary. Conservation of special status species means the use of all methods and procedures which are necessary to improve the

condition of special status and their habitats to a point where their special status recognition is no longer warranted (USDI 2001). Sage-grouse are BLM special status species in California and Nevada.

The objectives of the special status species policy are:

1. To conserve listed species and the ecosystems on which they depend.
2. To ensure that actions requiring authorization or approval by the Bureau of Land Management (BLM) are consistent with the conservation needs of special status species and do not contribute to the need to list any special status species, either under provisions of the ESA or other provisions of this policy (USDI 2001).

Special Status Species: State Directors, generally in cooperation with State agencies that are responsible for fisheries, wildlife and botanical resources and State Natural Heritage programs, shall designate BLM sensitive species. The sensitive species designation, for species other than federally listed, proposed, or candidate species, may include such native species as those that:

1. could become endangered in or extirpated from a state, or within a significant portion of its distribution in the foreseeable future,
2. are under status review by USFWS and/or NMFS,
3. are undergoing significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution,
4. are undergoing significant current or predicted downward trends in population or density such as that Federally listed, proposed, candidate, or State listed status may become necessary,
5. have typically small and widely dispersed populations,
6. are inhabiting ecological refugia, specialized or unique habitats, or
7. are State listed but which may be better conserved through application of BLM sensitive species status. Such species should be managed to the level of protection required by State laws or under the BLM policy for candidate species, whichever would provide better opportunity for its conservation.

II.E. CONSERVATION GOALS, OBJECTIVES, AND ASSOCIATED ACTIONS

The following conservation goals, objectives, and associated actions shall guide and be the target for conservation and management actions for sage-grouse and the sagebrush ecosystem upon which they rely. These goals and objectives are a summarization of risk levels developed by interagency and stakeholder coordination between the Washoe-Modoc Sage-Grouse Working Group and the Northeastern California Sage-Grouse Working Group. Copies of the Habitat and Population Risk Factor Matrices are available upon request.

Successful implementation of the Conservation Strategy (CS) may preclude the need to federally list the species as well as provide grounds for changing the legal status of this species at the California and Nevada state levels. The CS is not intended to alter the current regulatory requirements of each agency, or, is the protection afforded this species through existing policies and guidelines negatively affected by this CS. These goals and objectives are intended to provide additional direction to successfully conserve sage-grouse and the sagebrush ecosystems upon which they rely.

Associated with each goal is a set of actions intended to achieve the goals. The actions described are general in nature. Site-specific actions for leks, and nesting habitat, brood rearing including summer brooding habitat, and winter habitat (high priority habitats) are listed in Appendix A.

All habitats are afforded equal protection. However, the value of this ranking is the ability to prioritize and expand conservation resources as effectively as possible. For the purposes of this section and the CS in general, Table 12, Section II.F Page 62 shall be maintained to reflect the current adopted ranking of the known habitats based on the best available information.

The adaptive management process will serve as *one of* the mechanisms by which these goals and objectives may be refined. Using information from future research and monitoring of sage-grouse population response to habitat protection and enhancement, along with a better understanding of which factors are limiting recruitment and survival, may change these priorities.

Note: All goals and actions pertaining to grazing are consistent with existing Land Use Plans (LUP) (Cal-Neva MFP, Willow Creek MFP, and Honey Lake Beckwourth MFP), the Standards for Land Health, and Guidelines for Livestock Grazing approved by the Secretary of the Interior July 13, 2000 (Appendix F). Specific LUP decisions are available from the Eagle Lake Field Office upon request. Goals and actions addressing annual lek counts are also consistent with existing LUPs.

All actions pertaining to OHV management are consistent with the Guidelines for OHV Use on Public Lands (Appendix F) which will be adopted within the Eagle Lake Field Office RMP in 2005.

Goal 1: Protect, Conserve, Restore, and Maintain Lek Habitat

Actions:

1) BLM shall not grant rights-of-way for any activity which would necessitate construction (erection) of any type of structure rising above the ground surface. These include overhead lines and structures, micro-wave towers, wind turbines, etc. within the lek viewshed or no closer than 3.2 km (2 miles) as was accomplished with the Alturas Intertie Transmission Line.

2) Require that the abandonment clause of right-of-way grants issued by a land management agency, California State Power Commission, and Nevada Public Utilities Commission require removal of overhead lines, including cross arms, *or* any other structure.

3) Protect against overzealous human observers venturing too close or onto leks by establishing one viewing lek with a marked viewing platform or site. Use educational signs with suggested protocol while observing strutting activity.

4) Continue to protect against domestic sheep bedding and grazing on leks during the spring through continued operator/BLM cooperation and citing this restriction as a part of the grazing license.

5) Continue to restrict aerial gunning for the control of predators by the USDA Wildlife Services to after 9:30 am within 3.2 km (2 miles) of a lek. This has been incorporated by Wildlife Services into their Animal Damage Control Plans for work in the Eagle Lake Field Office area.

6) If monitoring data confirms that OHV use is a disturbance to lek activity, restrict OHV use as necessary.

7) The 2006 Eagle Lake Field Office RMP shall initiate more closely managed use in what is now an “open” area within 3.2 km (2 miles) of leks.

8) Implement a public education program informing the public of the importance of leks, and the need to conserve them for strutting activity.

9) Acquire Conservation Easements on privately owned lek sites and adjacent nesting habitat through USFWS Section 6 grants and similar sources. One project on four (4) such sites is currently approved and underway in cooperation with the Wildlife Conservation Board and NDOW.

Goal 2: Protect Against Direct Loss of Leks Due To Paving, Surface Mining, Land Exchanges, Converting Native Vegetation to Cultivated Agricultural Vegetation, and Increased Vegetation Screening.

Actions:

1) BLM will not exchange or sell lands that have an active or inactive lek within them.

2) Private land owners will be advised of any leks on their property to avoid, as much as possible, loss of leks. Coordination should include the private land owner, NRCS, and CDFG.

3) No paving of roads will be allowed on BLM administered lands if paving will harm lek habitat.

4) Mining, such as material pits, where it is the option of the permitting agency to approve or deny a lease will not be allowed on or within 3.2 km (2 miles) of a lek.

5) Mining for locatable minerals such as gold, under the 1872 Mining Law, is not as easily controlled. Conservation and effective rehabilitation measures will be made a part of the mine's operations plan.

6) Vegetation is visually monitored during each annual lek count.

7) If visual monitoring detects an increase in screening vegetation on the lek, appropriate action is taken after strutting activity is completed for the season.

8) Once a treatment is applied, quantitative monitoring will be established to measure treatment success.

Goal 3: Insure Fences Within 1 Mile of Leks Do Not Pose A Hazard For Sage-Grouse in Low Trajectory Flight.

Actions:

1) Do not construct new fences or move existing fences to within 1.6 kilometers (1 mile) of a lek.

2) If fence construction cannot be avoided within the lek's buffer zone, the fence will consist of "let-down" panels which are let down during the strutting season.

3) All braces, gateposts, or wooden posts used are required to have anti-perch structures.

Goal 4: Maintain 124,120 Acres (8.4% of the PMU) of R-0 (Healthy) Sage-Grouse Habitat Vegetation Communities and Ecological Sites at Their Potential.

Actions:

1) Where R-0 values are achieved, sustain them over the long term by periodic disturbances, as needed, to maintain vigor in the understory grasses and forbs and retain or replace an appropriate sagebrush canopy cover.

2) Graze existing vegetation in a manner that provides an opportunity for herbaceous perennial plant seedling establishment (grass and forbs), and facilitates understory vigor.

3) Manage sagebrush ecosystems to be consistent with the Biodiversity Standard for Land Health (Appendix F). Pellant et al. (2000), *Interpreting Indicators of Rangeland Health* will be used as one tool to evaluate whether the Objective is being met.

NOTES: If the three action items above are successful in maintaining healthy sage-grouse habitat and Standards for Land Health stocking rates and grazing systems should not be affected.

To avoid unnecessary conflicts between resource uses, vegetation management and restoration activities will be coordinated with grazing permittees, other affected users, and BLM natural resources Interdisciplinary Team at the allotment scale. Site specific grazing strategies will be developed for each allotment, as necessary.

Goal 5: **Restore 322,966 Acres (22% of the PMU) of R-1, Limited Sage-Grouse Habitat Vegetation Communities and Ecological Sites to Their Potential.**

Actions:

1) Seed native sagebrush of the subspecies and ecotype that previously existed at the site, native grass, and forb species into each fire to accelerate recovery of R-1 lands to R-0. Establish appropriate management response wildland fire suppression in Wyoming big sagebrush ecosystems.

Goal 6: **Restore 66,275 Acres (4.5% of the PMU) of R-2, Limited Sage-Grouse Habitat Vegetation Communities and Ecological Sites to Their Potential.**

Actions:

1) Seek opportunities for vegetation treatment and reseeding with native perennial grasses and forbs.

2) Where wildland or prescribed fire has removed or thinned sagebrush overstory providing seed access to the bare understory, seed native grass and forb species to accelerate recovery of R-2 lands to R-0. If necessary, after wildland fire(s), reseed with native sagebrush subspecies and ecotype.

3) In the absence of fire, thin the sagebrush overstory using mechanical or chemical means and reseed with native perennial grasses and forbs.

Goal 7: **Restore 4,251 Acres (0.3% of the PMU) of R-3 Habitat and Recover 97,222 Acres (6.6% of the PMU) of X-3 Habitat vegetation Communities and Ecological Sites to Their Potential.**

Actions: In areas where juniper has invaded a site but the site has not crossed a threshold (R-3 to X-3) appropriate conservation actions will include the following:

1) Nesting Habitat: Remove primarily seedling and sapling trees leaving some mature juniper for use by native species that require the tree structure, except within 6 km (3.73 miles) of leks.

2) Brood-rearing Habitat: Encourage wood and biomass cutting with reseeding of native perennial species.

3) Winter Habitat: Treat using a mixture of mechanical and prescribed fire treatments followed with reseeding of native perennial species.

Recovery of X-3 areas is a highly expensive human intervention using mechanical treatments. Conservation actions apply to nesting, brood-rearing, and winter habitats.

1) Conservation measures include taking advantage of grants, or large project initiative funding to complete site treatments which include removal of dominant species and reseeding with a mix of perennial native shrubs, grasses, and forbs.

Goal 8: Restore 684,627 Acres (46% of the PMU) of R-4 Habitat and Recover 175,041 Acres (12% of the PMU) of X-4 Habitat Vegetation Communities and Ecological Sites to Their Potential.

Actions: In areas where annual non-native grass species have invaded a site but the site has not crossed a threshold (R-4 to X-4) appropriate conservation actions will include the following:

1) Adjust grazing, as necessary, to allow existing perennial grasses and forbs to compete. To avoid unnecessary conflicts between resource uses, vegetation management and restoration activities will be coordinated with grazing permittees, other affected users, and BLM natural resources Interdisciplinary Team at the allotment scale. Site specific grazing strategies will be developed for each allotment, as necessary.

2) Seek opportunities for vegetation treatment and reseeding with native perennial grasses and forbs.

3) Seed native sagebrush of the subspecies and ecotype that previously existed at the site, native grass, and forb species into each fire to accelerate recovery of R-1 lands to R-0, and keep R-4 lands from degrading to X-4 (Section II.D). Establish appropriate management response wildland fire suppression in Wyoming big sagebrush ecosystems.

Recovery of X-4 areas is a highly expensive human intervention using mechanical treatments. Conservation actions apply to nesting, brood-rearing, and winter habitats.

1) Conservation measures include taking advantage of grant, or large project initiative funding to complete site treatments which include removal or severe set-back of dominant annual non-native grass species, and reseeding with a mix of perennial native shrubs, grasses, and forbs.

Goal 9: Manage Wild Horse and Burro and Livestock Grazing in a Manner That Benefits Sage-Grouse Habitat.

Actions: 1) Manage the following Herd Management Areas (HMA) in the PMU to the following AMLs.

Table 9. Wild Horse and Burro Herd Management Areas

Area Name	Area Number	Acreage (BLM/Other)	Midpoint of AML (Head)	Estimated Population (031/05)
New Ravendale HMA	CA-243	18,500 / 9,060	15	23
Twin Peaks HMA	CA-242	653,425 / 144,502	603 (h) 94 (b)	1079 (h) 79 (b)
Coppersmith HMA	CA-261	60,274 / 13,273	63	293
Buckhorn HMA	CA-262	67,392 / 9,388	72	71
Fort Sage HMA	CA-241	15,759 / 0	38 (est.)	42
Totals		**815,350 / 176,223**	**791 (h) 94 (b)**	**1,508 (h) 79 (b)**
(h) = horses (b) = burros				

2) Establish a priority within the Eagle Lake RMP to develop an Implementation Plan to manage Twin Peaks HMA as a meta-population (a population of greater than 2 bands within a geographical area), and at the appropriate AML for maintaining the Standards for Land Health (Appendix F).

3) In Nesting Habitat, maintain 18 cm (7 inches) of residual grass height within the dripline of sagebrush that is 61 – 70 cm (24” – 27”) in height.

4) In R-2 areas where existing species of perennial grass cannot normally reach 18cm (7”) of growth, reestablish native grass species that have greater vertical structure.

5) In areas where the 18 cm (7”) stubble heights under sagebrush should, but do not occur, manage all grazing to ensure the objective can be met.

6) In R-4 habitat adjust grazing levels, as necessary, to allow existing perennial grasses and forbs to compete with the non-native invasive grass present. To avoid unnecessary conflicts between resource uses, vegetation management and restoration activities will be coordinated with grazing permittees, other affected users, and BLM natural resources Interdisciplinary Team at the allotment scale. Site specific grazing strategies will be developed for each allotment, as necessary.

7) Establish and fund research to investigate if trampling of nests by domestic sheep does occur and if it is an issue of adverse affect.

8) If Standards for Land Health and sage-grouse habitat objectives are being met there should be no affect on stocking levels, and grazing practices.

Goal 10: Manage OHV Use In Nesting Habitat to Insure There is no Measurable Adverse Impact.

Actions:

1) Incorporate studies completed during 2004 by the Point Reyes Bird Observatory (PRBO) concerning impacts to nesting birds from OHV use for application within sage-grouse habitat.

2) Continue closure of OHV trails illegally pioneered into Wilderness Study Areas (WSA).

3) Close OHV trails where use is adversely impacting sage-grouse nesting, as necessary.

Goal 11: Restrict Herbicide Broadcast Spraying Around Leks, and Lek Complex Associated Habitats.

Actions:

1) No broadcast herbicide treatments will occur within nesting and brood-rearing habitat unless they are shown to be beneficial to the sagebrush ecosystem and sage-grouse.

2) No large scale broadcast spraying of herbicide within 6 km (3.73 miles) of leks.

3) Noxious weeds will be controlled using specific treatments focused on the specific infestations.

4) From Connelly et al. (2000): *Until research unequivocally demonstrates that using tebuthiuron and similar-acting herbicides to control sagebrush has no long-lasting negative impacts on sage-grouse habitat, use these herbicides only on an experimental basis and over a sufficiently small area that any long-term negative impacts are negligible.*

Goal 12 Maintain Meadows (Lentic Wetlands) in a Healthy State.

Actions: Land management agencies use fencing of springs and associated meadows/wetlands as a tool for protection from overgrazing and trampling by wild horses, burros, and livestock. Trampling of springs and associated meadows/wetlands can result in a violation of Land Health Standards 3 – Water Quality and 4 – Riparian and Wetland Sites (Appendix F). At least 60% of the over 160 springs in the Eagle Lake Field Office area are fenced. The intent of protection, however, can become a cause for stagnation if the protected areas are not treated to maintain the cover, density, diversity, and vegetative health of the site. Some use of meadows by livestock at the proper times is beneficial to sage-grouse. Burning of meadows can also accomplish much in the way of habitat maintenance for sage-grouse.

Damage has been recorded to several unfenced springs and meadows within sage-grouse habitat as a result of improper OHV use primarily during wet seasons. Rutting springs and meadows with the tires from OHVs can result in the same lowering of the water table that occurs as a result from trampling.

1) If agencies or private land owners are enclosing a meadow to exclude over utilization or degradation the entity(s) involved must establish adaptive management goals and actions, such as grazing or burning the meadows as necessary, to maintain appropriate vegetation structure, diversity, density, composition, and vigor as described in Land Health Standards 3 – Water Quality and 4 – Riparian and Wetland Sites.

2) Maintain or achieve Proper Functioning Condition (PFC), consistency with Land Health Standards 3 – Water Quality and 4 – Riparian and Wetland Sites, and proper sage-grouse habitat criteria of wetlands through application of the utilization levels prescribed in Livestock Grazing Guideline 16.

3) Manage OHV use to enhance healthy riparian/wetland conservation.

Goal 13: Stabilize and Rehabilitate Wildland and Prescribed Fires in Nesting Habitat.

Actions:

1) During fire-suppression activities, do not remove or burn any remaining patches of sagebrush within the fire perimeter.

2) In areas of large-scale loss (>/= 40% of original winter habitat), protect all remaining sagebrush habitats.

3) Reseed former sage-grouse habitat with the appropriate subspecies of sagebrush and herbaceous species unless the species are recolonizing the area in a density that would allow recovery within 15 years (sagebrush canopy cover of 10-30% and total height of 60 – 71cm (24 – 28 inches)).

4) Discourage prescribed burns > 50 ha. (123 acres), and do not burn > 20% of an area used by sage-grouse during winter within any 20-30 year interval (depending on estimated recovery time for the sagebrush habitat).

5) WAFWA Guidelines (Connelly et al. 2000) provide additional direction for protection of breeding habitat (leks and nesting habitat) as follows:

4) Do not use fire in sage-grouse habitats prone to invasion by cheatgrass and other invasive weed species unless adequate measures are included in restoration plans to replace the cheatgrass understory with perennial species using approved reseeding strategies. These strategies could include, but are not limited to, use of pre-emergent herbicides (e.g., Oust, Plateau) to retard cheatgrass germination until perennial herbaceous species become established.

5) When restoring habitats dominated by Wyoming big sagebrush, regardless of the techniques used (e.g., prescribed fire, herbicides), do not treat >20% of the nesting breeding habitat (including areas burned by wildfire) within a 30-year period

(Bunting et al. 1987). The 30-year period represents the approximate recovery time for a stand of Wyoming big sagebrush.

6) When restoring habitats dominated by mountain big sagebrush, regardless of the techniques used (e.g., fire, herbicides, etc.), treat </= 20% of the breeding habitat (including areas burned by wildfire) within a 20-year period (Bunting et al. 1987). The 20-year period represents the approximate recovery time for a stand of mountain big sagebrush. Some mountain big sagebrush stands within the PMU have recovered in 15 years.

6) As an alternative to burning investigate and test mechanical methods, such as, using the Dixie Harrow to thin sagebrush canopies that have a greater than necessary canopy closure.

Goal 14: Counter Low Production Rates by Meeting Sage-Grouse Proper Nutrition Needs.

Actions: 1) Research conducted in the California portion of the PMU should be extended to any captures of adult females associated with any radio telemetry project in the Nevada portion.

2) Measures to protect and restore sagebrush quality (age) and quantity should be considered a high priority on winter and breeding ranges within this PMU.

Goal 15: Determine Population Counts and Trends in the PMU.

Determining sage-grouse abundance and changes in populations are critical to making proper management decisions and evaluating the effectiveness of conservation measures. Differences in lek monitoring between California and Nevada mean that the ability to determine trends in the population are substantially different between states. All active leks within 49 lek complexes (Table 10) in the California portion of the PMU (32 in 2004) have been counted for peak male attendance each year since 1987. The 35 known lek sites identified in the Nevada portion of the PMU have not been combined into lek complexes (Table 10) and have not been monitored for activity or numbers of peak males on a regular basis due to

remoteness and staff limitations. It is possible that less than 50% of these leks are currently active. Only 17 have been detected as active since 1990 and an additional 12 are not known to have been active since 1980. Changes in lek monitoring will be needed in the Nevada portion of the PMU to evaluate the current population status or any future changes in sage-grouse abundance.

Table 10. Leks, active and historical, within the Buffalo - Skedaddle Population Management Unit.

Complex[1]	Lek ID#[2]	Yr Last Active	Complex[1]	ID#[2]	Yr Last Active
California					
Central Lassen Zone					
Shaffer	**LAS0004**	**2004**	**Moon Valley**	LAS0117	Historical
	LAS0088	1973	**Grasshopper**	**LAS0105**	**2004**
	LAS0090	1970		LAS0044	1964
	LAS0089	Historical	**Spanish Springs**	**LAS0080**	**2004**
	LAS0091	Historical		LAS0079	2003
	LAS0092	Historical		LAS0019	Historical
	LAS0134	2003		LAS0056	Historical
Karlo	LAS0049	Historical	**Balls Canyon**	LAS0081	1990
LBM	**LAS0077**	**2004**	**View**	LAS0084	1972
	LAS0006	2001		LAS0083	1971
	LAS0103	Historical		LAS0085	1953
	LAS0147	**2004**		LAS0082	Historical
Horse	LAS0106	2001	**Crest**	LAS0118	1995
	LAS0116	2002	**Pete's**	LAS0047	1966
	LAS0121	Historical		**LAS0120**	**2004**
Woods Driveway	LAS0133	2002		LAS0123	2003
Mad-Prairie	**LAS0002**	**2004**		LAS0048	Historical
	LAS0060	2000		**New Code**	**2004**
	LAS0062	1990	**Mad. WMA**	LAS0111	1956
	LAS0061	Historical	**Filson Road**	LAS0113	1956
Mad-Canary	LAS0019	1996	**SE Anderson**	LAS0040	Historical
Mad-West	LAS0003	2002			
	LAS0015	1998			
	LAS0104	Historical			
East Lassen Zone					
Eastside	**LAS0101**	**2004**	**Telephone**	WAS0001	1991
	LAS0008	Historical		WAS0008	Historical
	LAS0100	1990		LAS0102	Historical
	LAS0098	1973		LAS0010	Historical
	LAS0099	Historical	**Hall**	**LAS0057**	**2004**
	LAS0009	Historical		LAS0005	Historical

Complex[1]	Lek ID#[2]	Yr Last Active	Complex[1]	ID#[2]	Yr Last Active
Spencer	LAS0119	Historical	**Shinn**	**LAS0001**	**2004**
	LAS0017	Historical		**LAS0107**	**2004**
	LAS0016	1972		LAS0045	2002
	LAS0093	Historical		LAS0108	Historical
	LAS0094	Historical		LAS0014	Historical
	LAS0095	Historical		LAS0046	Historical
	LAS0096	2000	**Buckhorn**	LAS0028	Historical
	LAS0097	Historical	**Bull Flat**	LAS0055	1973
	LAS0018	Historical		LAS0022	Historical
Gillman	**LAS0011**	**2004**	**S. of Bull**	LAS0050	Historical
	LAS0012	1990		LAS0020	1991
	LAS0013	1994		LAS0021	1991
	LAS0063	1990	**Mud Flat**	LAS0087	1972
	LAS0064	1998		LAS0086	1953
	LAS0065	2002		LAS0025	1990
	LAS0127	**2004**		LAS0131	1990
	LAS0146	**2004**		LAS0130	1990
	LAS0147	Historic			
Chalk	**LAS0071**	**2004**			
	LAS0072	1994	**LMF**	LAS0074	1971
Skedaddle	**WAS0002**	**2004**		LAS0073	1964
	WAS0004	1991		LAS0075	1991
	WAS0006	1991		LAS0076	1994
	LAS0067	1967	**Rush**	**LAS0112**	**2004**
	LAS0051	1971		**LAS0135**	**2004**
	WAS0003	Historical		LAS0144	2001
	WAS0007	Historical	**Demolition**	LAS0052	1972
	LAS0068	Historical		LAS0053	Historical
	LAS0066	Historical	**Smoke Crk.**	LAS0122	Historical
	LAS0026	Historical	**5 Springs**	LAS0058	Historical
	WAS0005	Historical		LAS0059	Historical
Lassen Non-Hunt					
Dodge	LAS0041	1994	**Desert Flat**	LAS0132	Historical
	LAS0110	Historical	**Coyote Flat**	LAS0007	1994
	LAS0150	**2004**		LAS0070	Historical
	LAS0151	**2004**		LAS0043	Historical
	LAS0152	**2004**	**Hayden Hill Corral**	**LAS0124**	**2004**
	LAS0153	**2004**		LAS0125	2003
	LAS0154	**2004**		LAS0023	1990
	LAS0155	**2004**		LAS0038	Historical
	LAS0156	**2004**		**LAS0148**	**2004**
	LAS0157	**2004**		**LAS0149**	**2004**
Dorsey	LAS0128	2003		LAS0039	1990
Tule. Valley	LAS0126	2002		LAS0024	Historical
	LAS0054	1971		LAS0129	1997
	LAS0033	Historical		**HH New**	**2004**

Complex[1]	Lek ID#[2]	Yr Last Active	Complex[1]	ID#[2]	Yr Last Active
	LAS0036	Historical	**Maiden**	LAS0042	Historical
	LAS0037	1965	**Ash Valley**	LAS0029	Historical
Tuledad Rim	LAS0035	2003		LAS0115	Historical
	LAS0034	**2004**		LAS0031	1970
Red Rock	LAS0032	Historical	**Myers Res.**	LAS0027	Historical
Madeline	LAS0035	Historical	**Dill Butte**	LAS0078	Historic
Dill Field	LAS0069	2003	**Juniper Crk.**	LAS0114	Historical
Snake Lake	MOD0083				
	MOD0084				
NEVADA					
Washoe County					
Antelope Basin	1	Historical	Mixie Flat	19	1992
Buckhorn	2	1977	N. Rye Patch Canyon	20	Historical
Burnt Lake	3	1979	**N. Sawmill**	**21**	**1998**
Butte Ground	4	1979	North Skedaddle	22	Historical
Cedar Canyon	5	1979	Parker Canyon	23	1992
Chicken Canyon	6	1980	Parsnip 1	24	1992
Chimney Bench	7	Historical	Parsnip 2	25	1992
Dobe	**8**	**1998**	Red Rock Canyon	26	1992
Eagle Head 1	9	1979	Rush Creek	27	1992
Eagle Head 2	10	1979	SOB Lake	28	1979
Five Spring	**11**	**1998**	S. Red Rock Canyon	29	Historical
Garden Lake	12	1992	S. Rye Patch Canyon	30	Historical
Garden Lake East	13	1979	**South Sawmill**	**31**	**1998**
Granite Canyon	**14**	**1998**	South Skedaddle	32	Historical
Horse Corral	15	1979	Stockade Flat	33	Historical
Jones flat	16	1980	Stone Corral	34	1979
M. Fork Buffalo Crk.	17	Historical	W. Buffalo Crk.	35	Historical
	18	Historical			

Actions:

1) NDOW will implement counts of all active leks for peak male attendance within the Buffalo - Skedaddle PMU by 2005, and identify trend leks.

2) Lek counts for peak male attendance will be completed by NDOW within the Nevada portion of the PMU on an annual basis.

3) CDFG will continue to count all active leks for peak male attendance within the California portion of the PMU on an annual basis.

4) CDFG and NDOW will monitor all known lek sites for activity by either aerial or ground checks by 2005 and each 5 years thereafter. The California portion was last completed in 2002.

5) CDFG and NDOW will develop spring breeding population and fall population estimates for sage-grouse in the Buffalo - Skedaddle PMU on an annual basis.

6) CDFG and NDOW will gather, on an annual basis, production and recruitment data in the Buffalo - Skedaddle PMU using hunter – harvested wings.

7) NDOW will implement a radio telemetry project by 2007 to determine seasonal movement and use areas of sage-grouse using Nevada leks in the Buffalo - Skedaddle PMU.

Goal 16: Prevent Sage-Grouse Die-offs From Insecticide Poisoning.

Actions:

1) Discourage use of highly toxic organophosphorus and carbamate insecticides. Discourage use of dimethoate through identification and use of less toxic alternatives.

2) Federal and state agencies will ensure an insecticide response to naturally occurring sagebrush defoliation is necessary before allowing insecticide use on lands they administer.

3) Where insecticides must be used on federal and state administered lands, limit use for spot applications of the least toxic chemicals, species specific, or biological treatment within timeframes beneficial to sage-grouse.

4) Private landowners will be advised if brood-rearing occurs on their lands and efforts will be made to assist landowners to acquire the least toxic chemicals or biological controls.

Goal 17: Insure Nesting Success is not Being Limited by Hunting, Poaching, or Predation.

Actions:

1) Aerial gunning of coyotes under federal animal damage control programs for domestic sheep protection takes place near many active leks in the PMU. This may provide some benefit for sage-grouse and is expected to continue.

2) Evaluation of female nesting success, from hunter collected wings, will continue in both California and Nevada portions of the Buffalo - Skedaddle PMU.

3) Should nesting success fall below 23% aggressive predator control measures will be implemented (Connelly et al. 2000).

4) The CDFG and NDOW will continue to use season timing, bag limits, and permit hunting systems to carefully limit harvest.

5) Seasons will continue to be structured to minimize the possibility that harvest could exceed 10% of the estimated fall populations.

6) Both states will continue law enforcement patrols to help insure that illegal harvest remains minimal.

Table 11: Summary of Conservation Goals for Sage-Grouse and Sagebrush Ecosystem

CONSERVATION GOALS
Goal 1: Protect, Conserve, Restore, and Maintain Lek Habitat
Goal 2: Protect Against Direct Loss of Leks Due To Paving, Surface Mining, Land Exchanges, Converting Native Vegetation to Cultivated Agricultural Vegetation, and Increased Vegetation Screening.
Goal 3: Insure Fences Within 1 Mile of Leks Do Not Pose a Hazard For Sage-Grouse in Low Trajectory Flight.
Goal 4: Maintain 124,120 Acres (8.4% of the PMU) of R-1 (Healthy) Sage-Grouse Habitat Vegetation Communities and Ecological Sites at Their Potential.
Goal 5: Restore 322,966 Acres (22% of the PMU) of R-1, Limited Sage-Grouse Habitat Vegetation Communities and Ecological Sites to Their Potential.

Goal 6: Restore 66,275 Acres (4.5% of the PMU) of R-2, (Limited Sage-Grouse Habitat) Vegetation Communities and Ecological Sites to Their Potential.
Goal 7: Restore 4,251 Acres (0.3% of the PMU) of R-3 (Limited Sage-Grouse Habitat) and Recover 97,222 Acres (6.6% of the PMU) of X-3 (Non Habitat) Vegetation Communities and Ecological Sites to Their Potential.
Goal 8: Restore 684,627 Acres (46% of the PMU) of R-4 (Limited Sage-Grouse Habitat) and Recover 175,041 Acres (12% of the PMU) of X-4 (Non Habitat) Vegetation Communities and Ecological Sites to Their Potential.
Goal 9: Manage Wild Horse and Burro and Livestock Grazing in a Manner That Benefits Sage-Grouse Habitat.
Goal 10: Manage OHV Use Within Nesting Habitat to Insure There is No Measurable Adverse Impact.
Goal 11: Restrict Herbicide Broadcast Spraying Around Leks, and Lek Complex Associated Habitats.
Goal 12: Maintain Meadows (Lentic Wetlands) in a Healthy State.
Goal 13: Stabilize and Rehabilitate Wildland and Prescribed Fires in Nesting Habitat.
Goal 14: Counter Low Production Rates by Meeting Sage-Grouse Proper Nutrition Needs.
Goal 15: Determine Population Counts and Trends in the PMU.
Goal 16: Eliminate Sage-Grouse Die-offs From Insecticide Poisoning.
Goal 17: Insure Nesting Success is Not Being Limited by Hunting, Poaching, or Predation.

II. F. DESCRIPTION OF MANAGEMENT ACTIONS

Essential components of the Conservation Strategy include protection, restoration, monitoring, research, and ongoing adaptive management. These efforts will be designed to secure current populations against extirpation and to increase their numbers; to expand the current distribution into historic habitat; to sustain existing and newly established populations over the long-term; and direct future management actions through adaptive responses informed by monitoring and research. The following actions provide the necessary support for the CS and its goals and objectives. Criteria used to prioritize these actions are as follows:

1. Concentrate maintenance and enhancement on seasonal use areas depicted in the table below.

Seasonal Use Priorities and Areas

Priority	Maintenance	Enhancement
1	L, N	B, N
2	W	W
3	B	L

L= Leks	B= Brood Rearing
N = Nesting	W = Winter

2. Concentrate on keeping sage-grouse habitat from shrinking. Maintain healthy habitats that support the most birds from the most leks as shown on use maps which include: telemetry data, “R” value maps, habitat maps. Enhancement activities will be focused on those that are at–risk of becoming non-productive (unhealthy). Unhealthy habitats will be addressed when funds and opportunities allow.

3. Can the projects be implemented: (from PECE)
   - □ Legal authority
   - □ Legal procedural requirements
   - □ Necessary authorizations obtained or will be obtained
   - □ Type and level of voluntary participation
   - □ Regulatory mechanisms are in place
   - □ Adequate funding will be obtained
   - □ Implementation schedule is provided
   - □ Plan is approved by all parties

4. Will the projects be effective?
   - □ The expected success will be based on experience of local resource managers and the scientific literature for habitat improvement
   - □ Threats are described and efforts to reduce the threat are described
   - □ Appropriate steps to reduce threats to the species are identified
   - □ Explicit objectives for conservation effort and dates for achieving them are stated.
   - □ Quantifiable performance measures to monitor for both compliance and effectiveness are included, i.e. plant community characteristics, sage-grouse use patterns, and lek counts

5. Take advantage of appropriate project opportunities when they present themselves. Some include:
   - □ NDOW – Nevada Department of Wildlife
   - □ LIP Grant – Landowner Incentive Program Grant
   - □ CDFG – California Department of Fish and Game
   - □ GBH – Game Bird Heritage
   - □ BLM CCS – Bureau of Land Management Challenge Cost Share
   - □ BLM CCI – Bureau of Land Management Cooperative Conservation Initiative
   - □ GBRI – Great Basin Rehabilitation Initiative
   - □ NFWF – National Fish and Wildlife Foundation

Protect and maintain active leks and nesting habitats.

Continue yearly lek counts during strutting season to determine peak lek activity on 32 active leks in California and seven active leks in Nevada. Determination of peak activity requires at least a total of four visits to each lek separated by every eight to ten days. The 32 active leks in California are within the Shaffer, Little Black Mountain (LBM), Madeline-Prairie, Grasshopper, Spanish Springs, Pete's, Eastside, Gilman, Chalk, Skedaddle, Hall, Shinn, Rush, Dodge, Dorsey, Tuledad. Valley, Tuledad Rim, Dill Field, and Hayden Hill Corral Complexes. The seven active leks in Nevada are: Dobe, Five Spring, Granite Canyon, North Sawmill, and South Sawmill.

Continue to inventory inactive and historical leks to substantiate if their status is accurate or if they are actually active. Protect currently inactive and historical leks that are in R-0 status to support potential expansion of sage-grouse back into those areas. Maintain R-0 value nesting habitat to support potential expansion of sage-grouse back into these areas. As funds become available, enhance nesting habitats within the inactive and historical lek complexes.

Develop site-specific management/action plans for brood-rearing, nesting, and winter habitats.

A fundamental element of coordinating the conservation effort for sage-grouse and the sagebrush ecosystems upon which they depend is collectively planning for the future. Each entity will lend its expertise to assist other partners in formulating plans for high priority restoration sites. It is envisioned that each site-specific management/action plan will take a 3 to 5 year look into the future and discuss conservation actions in general terms. These plans will include site-specific ecology, potential restoration measures, monitoring efforts, and research needs. Because of the uncertainty in management and environmental conditions, detailed plans are not necessary or desirable. These plans will change as more knowledge is gained concerning conservation needs and management techniques. Activities will focus on maintaining R-0 habitat within the nesting and brood-rearing habitats utilized by sage-grouse using the active leks. Restoration will be focused on those areas of R-2 (sagebrush dominated with little or no herbaceous understory), R-3 (juniper) and R-4 (annual non-native invasive species) value. A preliminary list of actions is provided in Appendix A.

The development of these plans will also serve as part of the coordination and cooperative process between agencies. By working together to develop and revise the plans, all participating entities will remain fully appraised of the actions of other agencies. This process will not only help increase the effectiveness of conservation efforts but will result in streamlining of projects. The Technical Sub-Committee (TSC) will provide technical assistance for each

site plan, and in the spirit of collaboration each public agency will implement projects consistent with their authorities and available resources.

Through the incentive programs (Appendix L), assistance will be available to private landowners whose properties include high priority habitat restoration sites. Guidance will be provided, if requested, on development of site-specific plans, and the TSC members from regulatory agencies will assist with the regulatory requirements for landowners participating in the incentive programs.

Manage all currently occupied habitats.

All currently ranked and unranked habitats that are occupied or have been occupied by sage-grouse will be managed to protect the species.

On public lands, unoccupied, potentially suitable habitat will be surveyed at least once every two years to identify new occupation events. Any newly occupied habitats would then be managed as currently occupied habitat (see above). In addition the following set of rules applies for unoccupied potentially suitable habitat:

- No alterations of R-0 value habitat, soil/site stability, biotic integrity, and hydrologic function without project review and protection of potentially suitable habitat;
- Consider management actions that encourage occupation;
- Restore R-1 (herbaceous cover but sagebrush overstory lacking), R-2 (sagebrush overstory but herbaceous understory lacking), R-3 (juniper encroachment) and R-4 (invasions of non-native herbaceous species) to benefit sage-grouse occupation; and
- No introduction of noxious weeds, and control of these species, if present.

On private lands, the focus of management will be to encourage stewardship of sage-grouse and their habitat. A stewardship program will be developed to assist private landowners (Section II.I). Ideally, private landowners will protect sage-grouse and their habitat on a voluntary basis. The TSC will be available to provide assistance to private landowners whose properties support high priority restoration sites.

Population Management Targets

Sage-grouse populations within the Buffalo - Skedaddle PMU are monitored primarily by counting all active leks for peak male attendance and evaluation of female nesting success and chicks per female based on analysis of hunter taken wings. The numbers of active leks detected each year also provides information on the status of the population. Peak male lek counts provide a method of estimating annual breeding populations if the cryptic or non-visible

segment (all other age and sex classes not counted on leks; females and males not attending) is added to the counted males and all active leks are counted at least 3 times (Connelly et al. 2000).

Based on an approximate ratio of 2.5 sage-grouse not counted on leks for every male counted, breeding populations in this PMU have fluctuated between about 1,500 and 4,500 since 1987. Fluctuations in breeding populations appear to be related to habitat conditions which are in turn largely determined by annual precipitation patterns. Decreases in the numbers of active leks are usually determined by decreasing populations which are often ultimately related to declines in viable nesting habitat adjacent to leks. The number of currently active leks is about 39 with 32 of these in the California portion of the PMU. A proposed target for the minimum number of active leks under this Conservation Strategy is 50 with a minimum breeding population of 5,000 sage-grouse. This should be considered as a workable target for this PMU.

Monitor populations and habitats.

Species Monitoring

Monitoring of any species distribution and population performance in relation to conservation actions is fundamental to evaluating the success or failure of any conservation strategy. Currently, four components of basic data are collected each year to evaluate sage-grouse trends within the Buffalo Skedaddle PMU. These include (1) peak seasonal counts of males on all active leks, (2) searches for new leks and checks of historically active leks for re-occupation, (3) determining safe hunting harvest levels at not more than 10% of the estimated fall population and (4) estimates of age, sex, and successfully nesting female composition from as many hunter returned wings as possible.

Each of these monitoring components is inter-related. A standardized sub-set of 13 California leks is used to calculate changes in the number of California hunting permits issued each year. These “Index” or “Trend” leks provide data from which any changes (increases or decreases) in breeding males should be able to be detected. Conversely, an assumption has been made that any change in the numbers of males counted on leks cannot take place without similar changes in female numbers; i.e., the population of one sex class is not likely to be increasing or decreasing in the opposite direction from the other.

As a double check on recruitment which should result in future changes in males counted on leks, the ratio of chicks, yearlings, and adults (by sex) is determined from hunter harvested wings. Nesting success of females is also determined from wing samples. The 1998 – 2001 radio telemetry study in the California portion largely validated the wing analysis through visual observation of nesting females over the same years (agreement to +/-5%). The overall

relationship of males counted on leks, active numbers of leks, hunting permits issued, total estimated hunting harvest, and recruitment and nesting success from wings have jointly tracked fairly well since 1987 (Tables 2,3, 4 and 5). It is anticipated that these monitoring components will continue to be rigorously collected and evaluated (including needed expansion in the Nevada portion).

Habitat Monitoring

Maintain a site ranking for every site.

Table 12 shows the initial adopted ranking of known sage-grouse leks. This table was derived from data and analysis in Sections II.C and II.D. This table and any subsequent modifications, will serve as the adopted site ranking for purposes of the goals and objectives, and actions addressed in Section II.E and II.F. This table relies entirely on the ranking outlined in Section II.D.

Table 12. Adopted Ranking of Known sage-grouse complexes or leks. Unranked sites will be ranked by May 2006. New sites will be ranked as found.

High Priority Complexes or Leks[1] Active 2002-Present	**Medium Priority Complexes or Leks[1] Active 1987-2001**	**Low Priority Complexes or Leks[1] Active Before 1987**
California		
Central Lassen Zone		
Shaffer	Mad-Canary	Karlo
LBM	Balls Canyon	Moon Valley
Horse	Crest	View
Woods Driveway		Mad. WMA
Mad-Prairie		Filson Road
Mad-west		SE Anderson
Grasshopper		
Spanish Springs		
Pete's		
East Lassen Zone		
Eastside	Spencer	Buckhorn
Gilman	Telephone	Bull Flat
Chalk	S. of Bull	Demolition
Skedaddle	Mud Flat	Smoke Creek
Hall	LMF	5 Springs
Shinn		
Rush		
Lassen Non-Hunt Zone		
Dodge	Coyote Flat Complex	Red Rock
Dorsey		Desert Flat
Tule. Valley		Maiden
Tuledad Rim		Ash Valley

High Priority Complexes or Leks[1] Active 2002-Present	Medium Priority Complexes or Leks[1] Active 1987-2001	Low Priority Complexes or Leks[1] Active Before 1987
Dill Field		Ash Valley
Hayden Hill Corral		Myers Res.
		Juniper Creek
		Dill Butte
		Snake Lake
		Madeline
Nevada		
	Dobe	Antelope Basin
	Five Spring	Buckhorn
	Garden Lake	Burnt Lake
	Granite Canyon	Butte Ground
	Mixie Flat	Cedar Canyon
	Parker Canyon	Chicken Canyon
	Parsnip 1	Chimney Bench
	Parsnip 2	Eagle Head 1
	Red Rock Canyon	Eagle Head 2
	Rush Creek	Garden Lake East
	South Sawmill	Horse Corral
		Jones Flat
		M. Fork Buffalo Crk. Complex
		N. Rye Patch Canyon
		SOB Lake
		South Red Rock Canyon
		S. Rye Patch Canyon
		South Skedaddle
		Stockade Flat
		Stone Corral
		W. Buffalo Creek

1. California has listed lek complexes, and Nevada, for now, lists leks.

Initial management and monitoring responsibilities

The signatories have developed a list of initial management and monitoring responsibilities (Table 13). Different entities have agreed to perform specific conservation actions. Some of these actions are clearly the responsibility of one or more entities, and some of the actions require consideration by the Technical Sub-Committee (TSC), Northeast California Sage-grouse Working Group (NCSGWG) and Nevada's Washoe-Modoc Sage-grouse Working Group (WMSGWG). This list represents commitments by those assigned to these actions within the confines of funding by the appropriate legislative authority.

Table 13. Five Year Plan for Management and Monitoring Responsibilities (2005 – 2009).

Conservation Actions	Entity to Implement[1]	Estimated Total Costs[2]
Assist in development of a conservation/management strategy/agreement.	All Parties	$250,000
Develop and implement an adaptive management strategy.	All Parties	$27,500/yr
Assist with funding for conservation plan/agreement.	All Parties	Staff Time
Assist in development of site-specific conservation recommendations for occupied sites.		
✓ Upon completion of annual surveys, appropriate measures will be developed for each occupied site.	All Parties	Adaptive Mgmt[3]
✓ Develop Mgmt Plans for all High Priority Lek Complexes.	All Parties	$22,000/site
✓ Develop Mgmt Plans for Medium and Low Priority Lek Complexes.	All Parties	$22,000/site
Goal 1: Protect, Conserve, Restore, and Maintain Lek Habitat.		
✓ BLM shall not grant rights-of-way for any activity which would necessitate construction (erection) of any type of structure rising above the ground surface. These include overhead lines and structures, micro-wave towers, wind turbines, etc. within the lek viewshed or no closer than 3.2 km (2 miles) as was accomplished with the Alturas Intertie transmission Line.	BLM	Staff Time
✓ Require that the abandonment clause of right-of-way grants issued by a land management agency, California State Power Commission, and Nevada Public Utilities Commission require removal of overhead lines, including cross arms, *or* any other structure.	BLM/CDFG&NDOW	Staff Time
✓ Protect against overzealous human observers venturing too close or onto leks by establishing one viewing lek with a marked viewing platform or site. Use educational signs with suggested protocol while observing strutting activity.	CDFG/NDOW	$20,000

Conservation Actions	Entity to Implement[1]	Estimated Total Costs[2]
✓ Continue to protect against domestic sheep bedding and grazing on leks through continued operator/BLM cooperation and citing this restriction as a part of the grazing license.	Livestock Operators/BLM	Staff Time
✓ Continue to restrict aerial gunning for the control of predators by the USDA Wildlife Services to after 9:30 am within 3.2 km (2 miles) of a lek. This has been incorporated by Wildlife Services into their Animal Damage Control Plans for work in Eagle Lake Field Office Area.	BLM/Wildlife Services	Staff Time
✓ If monitoring data confirms that OHV use is a disturbance to lek activity, restrict OHV use as necessary.	BLM/CDFG/NDOW	Staff Time
✓ The 2006 Eagle Lake Field Office RMP shall initiate more closely managed use in what is now an "open" area within 3.2 km (2 miles) of leks.	BLM	Staff Time
✓ Implement a public education program informing the public of the importance of leks, and the need to conserve them for strutting activity.	CDFG/NDOW/BLM/All Parties	$10,000
✓ Acquire Conservation Easements on privately owned lek sites and adjacent nesting habitat through USFWS Section 6 grants and similar sources. One project on four (4) such sites is currently approved and underway in cooperation with the Wildlife Conservation Board and NDOW.	CDFG/NDOW/USFWS	$50,000/yr.
Goal 2: Protect Against Direct Loss of Leks Due To Paving, Surface Mining, Land Exchanges, Converting Native Vegetation to Cultivated Agricultural Vegetation, and Increased Vegetation Screening.		
✓ BLM will not exchange or sell lands that have an active or inactive lek within them.	BLM	Staff Time
✓ Private land owners will be advised of any leks on their property to avoid, as much as possible loss of leks.	CDFG&NDOW/NRCS/FSA	Staff Time
✓ No paving of roads will be allowed on BLM administered lands, if paving will harm lek habitat.	BLM/All Parties	Staff Time

Conservation Actions	Entity to Implement[1]	Estimated Total Costs[2]
✓ Mining, such as material pits, where it is the option of the permitting agency to approve or deny an application, a lease will not be allowed on, or within 3.2 km (2 miles) of a lek.	BLM	Staff Time
✓ Mining of locatable minerals such as gold, under the 1872 Mining Act, is not easily controlled. Conservation and effective rehabilitation measures will be made part of the mine's operations plan.	BLM/All Parties	Staff Time
✓ Vegetation is visually monitored during each annual lek count.	CDFG/NDOW/Volunteers	Staff Time
✓ If visual monitoring detects an increase in screening vegetation on the lek, appropriate action is taken after strutting activity is completed for the season.	BLM/CDFG/NDOW	Staff Time
✓ Once a treatment is applied, quantitative monitoring will be established to measure treatment success.	BLM/CDFG/NDOW	Staff Time
Goal 3: Insure Fences Within 1 Mile of Leks Do Not Pose A Hazard For Sage-Grouse in Low Trajectory Flight.		
✓ Do not construct new fences or move existing fences to within 1.6 km (1 mile) of a lek.	BLM/Private Landowners/CDFG/NDOW	Staff Time
✓ If fence construction cannot be avoided within the lek's buffer zone, the fence will consist of "let-down" panels which are let down during the strutting season.	BLM/ Private Landowners/CDFG/NDOW	Staff Time
✓ All braces, gateposts, or wooden posts used are required to have anti-perch structures.	BLM/Livestock Operators/Private Landowners/CDFG/NDOW	Staff Time
Goal 4: Maintain 124,120 Acres (8.4% of the PMU) of R-0 (Healthy) Sage-Grouse Habitat Vegetation Communities and Ecological Sites at Their Potential.		
✓ Where R-0 values are achieved, sustain them over the long term by periodic disturbances, as needed, to maintain vigor in the understory grasses and forbs and retain or replace an appropriate sagebrush canopy cover.	BLM/Livestock Operators/Private Landowners/NRCS	Staff Time
✓ Graze existing vegetation in a manner that provides an opportunity for herbaceous perennial plant seedling establishment (grass and forbs), and facilitates understory vigor.	BLM/Livestock Operators/Private Landowners/NRCS	Staff Time

Conservation Actions	Entity to Implement[1]	Estimated Total Costs[2]
✓ Manage sagebrush ecosystems to be consistent with the Biodiversity Standard for Land Health (Appendix F). Pellant et al. (2000), *Interpreting Indicators of Rangeland Health* will be used as one tool to evaluate whether the objective is being met.	BLM/Livestock Operators/Private Landowners/NRCS	Staff Time
✓ If the above actions are successful in maintaining healthy sage-grouse habitat and Standards for Land Health stocking rates and grazing systems should not be affected. ✓ To avoid unnecessary conflicts between resource uses, vegetation management and restoration activities will be coordinated with grazing permittees, other affected users, and BLM natural resources Interdisciplinary Team at the allotment scale. Site specific grazing strategies will be developed for each allotment, as necessary.	BLM/Livestock Operators/Private Landowners/NRCS	Staff Time
Goal 5: Restore 322,966 Acres (22% of the PMU) of R-1, Limited Sage-Grouse Habitat Vegetation Communities and Ecological Sites to Their Potential.		
✓ Seed native sagebrush of the subspecies and ecotype that previously existed at the site, native grass, and forb species into each fire to accelerate recovery of R-1 lands to R-0. Establish appropriate management response wildland fire suppression in Wyoming big sagebrush ecosystems.	BLM/All Parties	$150/acre Staff Time
Goal 6: Restore 66,275 Acres (4.5% of the PMU) of R-2, Limited Sage-Grouse Habitat Vegetation Communities and Ecological Sites to Their Potential.		
✓ Seek opportunities for vegetation treatment and reseeding with native perennial grasses and forbs.	BLM/CDFG&NDOW & All Parties	$400/acre Staff Time
✓ Where wildland or prescribed fire has removed or thinned sagebrush overstory providing seed access to the bare understory, seed native grass and forb species to accelerate recovery of R-2 lands to R-0. If necessary, reseed with native sagebrush subspecies and ecotype.	BLM/ All Parties	$70/acre Staff Time

Conservation Actions	Entity to Implement[1]	Estimated Total Costs[2]
✓ In the absence of fire, thin the sagebrush overstory using mechanical or chemical means, and reseed with native perennial grasses and forbs.	BLM/All Parties	$80/acre Staff Time
Goal 7: Restore 4,251 Acres (0.3% of the PMU) or R-3 Habitat and Recover 97,222 Acres (6.6% of the PMU) of X-3 Habitat Vegetation Communities and Ecological Sites to Their Potential (Unhealthy Sage-Grouse Habitat).		
In areas where juniper has invaded a shrub site but the site has not crossed a threshold (R-3 to X-3) appropriate conservation actions will include the following:		
✓ Nesting habitat: Remove primarily seedling and sapling trees leaving some mature juniper for use by native species that require the tree structure, except within 6 km (3.85 miles) of leks.	BLM /All Parties	$50/acre Staff Time
✓ Brood-rearing habitat: Encourage wood and biomass cutting with reseeding of native perennial species.	BLM /All Parties	$60/acre Staff Time
✓ Winter habitat: Treat using a mixture of mechanical and prescribed fire treatments followed with reseeding of native perennial species.	BLM/All Parties	$100/acre Staff time
Recovery of X-3 areas is a highly expensive human intervention using mechanical treatments. Conservation actions apply to nesting, brood-rearing, and winter habitats.		
✓ Conservation measures include taking advantage of grants, or large project initiative funding to complete site treatments which includes removal of dominant species, and reseeding with a mix of perennial native shrubs, grasses, and forbs.	BLM/All Parties	$600/acre Staff Time
Goal 8: Restore 684,627 Acres (46% of the PMU) of R-4 Habitat (Marginal Sage-Grouse Habitat) and Recover 175,041 Acres (12% of the PMU) of X-4 Habitat (Unhealthy Sage-Grouse Habitat) Vegetation Communities and Ecological Sites to Their Potential		
In areas where annual non-native grass species have invaded a site but the site has not crossed a threshold (R-4 to X-4) appropriate conservation actions include the following:		

Conservation Actions	Entity to Implement[1]	Estimated Total Costs[2]
✓ Adjust grazing, as necessary, to allow existing perennial grasses and forbs to compete. To avoid unnecessary conflicts between resource uses, vegetation management and restoration activities will be coordinated with grazing permittees, other affected users, and BLM natural resources Interdisciplinary Team at the allotment scale. Site specific grazing strategies will be developed for each allotment, as necessary.	BLM/Livestock Operators/Private Landowners/NRCS	Staff Time
✓ Seek opportunities for vegetation treatment and reseeding with native perennial grasses and forbs.	BLM/All Parties	$100/acre Staff Time
✓ Seed native sagebrush of the subspecies and ecotype that previously existed at the site, native grass and forb species into each fire to accelerate recovery of R-1 lands to R-0, and keep R-4 lands from degrading to X-4.(Section II.D.). Establish appropriate management response wildland fire suppression in Wyoming big sagebrush ecosystems.	BLM/All Parties	$200/acre Staff Time
Recovery of X-4 areas is a highly expensive human intervention using mechanical, chemical, and fire treatments. Conservation actions apply to nesting, brood-rearing, and winter habitats.		
✓ Conservation measures include taking advantage of grants, large project initiative funding, and wildland fire emergency stabilization and rehabilitation funding to complete site treatments which include removal or severe set-back of dominant annual non-native grass species and reseeding with a mix of perennial native grasses, forbs, and shrubs.	BLM/All Parties	$600/acre Staff Time
Goal 9: Manage Wild Horse and Burro and Livestock Grazing in a Manner That Benefits Sage-Grouse Habitat.		
✓ Manage Herd Management Areas (HMA) in the PMU to the Appropriate Management Levels (AML) shown on Table 9 (Page 48)	BLM/Wild Horse and Burro Groups	Staff Time

Conservation Actions	Entity to Implement[1]	Estimated Total Costs[2]
✓ Establish a priority within the Eagle Lake RMP to develop an Implementation Plan to manage Twin Peaks HMA as a meta-population (a population of greater than 2 bands within a geographical area), and at the appropriate AML for maintaining the Standards for Land Health (Appendix F).	BLM/All Parties	Staff Time
✓ In Nesting Habitat, maintain 18 cm (7 inches) of residual grass height within the dripline of sagebrush that is 61 – 70 cm (24" – 27") in height.	BLM/Livestock Operators	Staff Time
✓ In R-2 areas where existing species of perennial grass cannot normally reach 18 cm (7") of growth, reestablish native grass species that have greater vertical structure.	BLM/All Parties	$200/acre Staff Time
✓ In areas where the18 cm (7") residual grass heights should, but do not occur, manage livestock grazing to ensure the objective can be met.	BLM/Livestock Operators	Staff Time
✓ In R-4 habitat adjust grazing levels, as necessary, to allow existing perennial grasses and forbs to compete with the non-native invasive grass present. To avoid unnecessary conflicts between resource uses, vegetation management and restoration activities will be coordinated with grazing permittees, other affected users, and BLM natural resources Interdisciplinary Team at the allotment scale. Site specific grazing strategies will be developed for each allotment, as necessary.	BLM/Livestock Operators	Staff Time
✓ Establish and fund research to investigate if trampling of nests by domestic sheep does occur, and if it is an issue of adverse affect.	BLM/CDFG/NDOW/Livestock Operators	$100,000
✓ If Standards for Land Health and sage-grouse habitat objectives are being met there should be no affect on stocking levels, and grazing practices.	BLM/Livestock Operators/Wild Horse and Burro Groups	Staff Time
Goal 10: Manage OHV Use In Nesting Habitat to Insure There are no Measurable Adverse Impacts.		

Conservation Actions	Entity to Implement[1]	Estimated Total Costs[2]
✓ Incorporate studies completed during 2004 by the Point Reyes Bird Observatory (PRBO) concerning impacts to nesting birds from OHV use for application within sage-grouse habitat.	BLM/CDFG/NDOW	Staff Time
✓ Continue closure of OHV trails illegally pioneered into Wilderness Study Areas (WSA).	BLM	$5,000/year
✓ Close OHV trails where use is adversely impacting sage-grouse nesting, as necessary.	BLM/Private Land Owners	$500/trail Staff Time
Goal 11: Restrict Herbicide Broadcast Spraying Around Leks, and Lek Complex Associated Habitats.		
✓ No broadcast herbicide treatments will occur within nesting and brood-rearing habitat unless they are shown to be beneficial to the sagebrush ecosystem and sage-grouse.	BLM & Private Landowners/ All Parties	Staff Time
✓ No broadcast spraying of herbicide within 6 km (3.73 miles) of leks.	All Parties	Staff Time
✓ Noxious weeds will be controlled using species specific treatments focused on the specific infestations.	All Parties	
✓ From Connelly et al. (2000): *Until research unequivocally demonstrates that using tebuthiuron and similar-acting herbicides to control sagebrush has no long-lasting negative impacts on sage-grouse habitat, use these herbicides only on an experimental basis and over a sufficiently small area that any long-term negative impacts are negligible.*	All Parties	Staff Time
Goal 12: Maintain Meadows (Lentic Wetlands) in a Healthy State.		
✓ If agencies or private land owners are enclosing a meadow to exclude over utilization or degradation the entity(s) involved must establish adaptive management goals and actions, such as grazing or burning the meadows as necessary, to maintain appropriate vegetation structure, diversity, density, composition, and vigor as described in Land Health Standards 3 – Water Quality and 4 – Riparian and Wetland Sites.	All Parties	Staff Time

Conservation Actions	Entity to Implement[1]	Estimated Total Costs[2]
✓ Maintain or achieve Proper Functioning Condition (PFC), consistency with Land Health Standards 3 – Water Quality and 4 – Riparian and Wetland Sites, and proper sage-grouse habitat criteria of wetlands through application of the utilization levels prescribed in Livestock Grazing Guideline 16.	BLM/Livestock Operators/CDFG	Staff Time
✓ Manage OHV use to enhance healthy riparian/wetland conservation.	All Parties	Staff Time
Goal 13: Stabilize and Rehabilitate Wildland and Prescribed Fires in Sage-Grouse Habitat.		
✓ During fire-suppression activities do not remove or burn any remaining patches of sagebrush within the fire perimeter.	BLM/CDFG/NDOW/California Department of Forestry (CDF)	Staff Time
✓ In areas of large-scale loss (>/=40% of original winter habitat), aggressively protect all remaining sagebrush habitats.	BLM/CDFG/NDOW/California Department of Forestry (CDF)	Staff Time
✓ Reseed former sage-grouse habitat with the appropriate subspecies of sagebrush and herbaceous species unless the species are recolonizing the area in a density that would allow recovery within 15 years (sagebrush canopy cover of 10-16% and total height of 60 – 71 cm (24-28 inches)).	BLM/Private Landowners/CDFG	$40/acre Staff Time
✓ Discourage prescribed burns > 50 ha. (123 acres), and do not burn >20% of an area used by sage-grouse during winter within any 20-30 year interval (depending on estimated recovery time for sagebrush habitat).	BLM/Private Landowners/CDFG	Staff Time

Conservation Actions	Entity to Implement[1]	Estimated Total Costs[2]
✓ Do not use fire in sage-grouse habitats prone to invasion by cheatgrass and other invasive weed species unless adequate measures are included in restoration plans to replace the cheatgrass understory with perennial species using approved reseeding strategies. These strategies could include, but are not limited to, use of pre-emergent herbicides (e.g., Oust, Plateau) to retard cheatgrass germination until perennial herbaceous species become established.	BLM/Private Landowners/CDFG	$350/acre Staff time
✓ *When restoring habitats dominated by Wyoming big sagebrush, regardless of the techniques used (e.g., prescribed fire, herbicides), do not treat >20% of the nesting breeding habitat (including areas burned by wildfire) within a 30-year period (Bunting et al. 1987). The 30-year period represents the approximate recovery time for a stand of Wyoming big sagebrush.*	BLM/Private Landowners/CDFG	Staff Time
✓ *When restoring habitats dominated by mountain big sagebrush, regardless of the techniques used (e.g., fire, herbicides, etc.), treat </= 20% of the breeding habitat (including areas burned by wildfire) within a 20-year period (Bunting et al. 1987). The 20-year period represents the approximate recovery time for a stand of mountain big sagebrush.* Some mountain big sagebrush stands within the PMU have recovered in 15 years.	BLM/Private Landowners/CDFG	Staff Time
Goal 14: Counter Low Production Rates by Meeting Sage-Grouse Proper Nutrition Needs.		
✓ Research conducted in the California portion of the PMU should be extended to any captures of adult females associated with any radio telemetry project in the Nevada portion.	CDFG/NDOW	$40,000/year Staff Time
✓ Measures to protect and restore sagebrush quality (age) and quantity should be considered a high priority on winter and breeding ranges within this PMU.	BLM/Private Landowners/All Parties	Staff Time

Conservation Actions	Entity to Implement[1]	Estimated Total Costs[2]
Goal 15: Determine Population Counts and Trends in the PMU.		
✓ NDOW will implement counts of all leks for peak male attendance within the Nevada portion of the PMU by 2005, and identify trend leks.	NDOW/Volunteers	Staff Time
✓ Lek counts for peak male attendance will be completed by NDOW within the Nevada portion of the PMU on an annual basis	NDOW/Volunteers	Staff Time
✓ CDFG will continue to count all active leks for peak male attendance within the California portion of the PMU	CDFG/Volunteers	Staff Time
✓ CDFG and NDOW will monitor all known lek sites for activity by either aerial or ground checks by 2005 and each five years thereafter. The California portion was last completed in 2002.	CDFG/NDOW	$15,000/ count Staff Time
✓ CDFG and NDOW will develop spring breeding population and fall population estimates for sage-grouse in the PMU on an annual basis.	CDFG/NDOW	Staff Time
✓ CDFG and NDOW will gather, on an annual basis, production and recruitment data in the PMU using hunter-harvested wings.	CDFG/NDOW	Staff Time
✓ NDOW will implement a radio telemetry project by 2007 to determine seasonal movement and use areas of sage-grouse using Nevada leks in the PMU	NDOW	$100,000/year
Goal16: Prevent Sage-Grouse Die-offs From Insecticide Poisoning.		
✓ Discourage use of highly toxic organophosphorus and carbamate insecticides. Discourage use of dimethoate through identification and use of less toxic alternatives.	Private Landowners, NRCS,BLM,USDA	Staff Time
✓ Federal and state agencies will ensure an insecticide response to naturally occurring sagebrush defoliation is necessary before allowing insecticide use on lands they administer.	BLM	Staff Time
✓ Where insecticides must be used on federal and state administered lands, limit use for spot applications of the least toxic chemicals or biological treatment.	BLM/CDFG	Staff Time

Conservation Actions	Entity to Implement[1]	Estimated Total Costs[2]
✓ Private landowners will be advised if brood-rearing occurs on their lands and efforts will be made to assist landowners to acquire the least toxic chemicals of biological controls.	Private Landowners/CDFG/NRCS	Staff Time
Goal17: Insure Nesting Success is not Being Limited by Hunting, Poaching, or Predation.		
✓ Aerial gunning of coyotes, under federal animal damage control programs for domestic sheep protection, takes place near many leks in the PMU. This may provide some benefit for sage-grouse and is expected to continue.	USDA/BLM	Staff Time
✓ Evaluation of female nesting success, from hunter collected wings, will continue in both California and Nevada portions of the PMU.	CDFG/NDOW	Staff Time
✓ Should nesting success fall below 23%, aggressive predator control measures will be implemented (Connelly et al. 2000).	CDFG/NDOW/USDA	Staff Time
✓ CDFG and NDOW will continue to use season timing, bag limits, and permit hunting systems to carefully limit harvest.	CDFG/NDOW	Staff Time
✓ Seasons will continue to be structured to minimize the possibility that harvest could exceed 10% of the estimated fall populations.	CDFG/NDOW	Staff Time
✓ Both states will continue law enforcement patrols to help insure that illegal harvest remains minimal.	CDFG/NDOW	$80,000/year

1. Principle entities will be listed first and separated from support entities by a slash (/).
2. Does not include environmental documentation if needed.
3. Items listed as "Adaptive Management" will be covered in the annual activities of the TSC, and is primarily staff time.

Acronyms: PMU – Population Management Unit; TSC – Technical Sub-Committee; CDFG – California Department of Fish and Game, NDOW Nevada Department of Wildlife, USDA – US Department of Agriculture, Wildlife Services, BLM – Bureau of Land Management

II.G. ADAPTIVE MANAGEMENT FRAMEWORK

The Buffalo - Skedaddle PMU Sage-Grouse and Sagebrush Ecosystems Conservation Strategy depends upon the successful implementation of an adaptive management framework designed to bring new information immediately into new management direction. In order to affectively carry out adaptive management a clear definition must be understood by all involved. For this CS adaptive management is defined as:

> *A type of natural resource management in which decisions are made as part of an ongoing science-based process. Adaptive management involves testing, monitoring, and evaluating applied strategies, and incorporating new knowledge into management approaches that are based on scientific findings and the needs of society. Results are used to modify management policy, strategies, and practices* (Federal Register 2000).

A step-down outline of the framework is presented in Figure 3. It briefly describes the key steps in acquisition, transfer, storage, analysis, and assessment of data from monitoring and research. It is important to recognize that agencies that have committed to implement the CS may chose to add further responsibilities or dissect described steps to better articulate intended tasks. Each of the steps presented in Figure 3 are requisite to ensure the success of the CS. It is critical that the signatories provide the resources necessary to ensure successful implementation of the adaptive management framework. Resources to implement the framework will be reconsidered by the TSC, NCSGWG, and WMSGWG for the fourth year and beyond. The TSC will report to the working groups. The TSC will serve to further develop the salient details of the adaptive management framework. It should also be noted that each entity within the PMU area has additional governmental structures and limitations of their authority. The authority granted to each agency limits the actions of that agency. In addition, a number of agencies have governing boards that ultimately set policies and allocate funding. Figure 3 does not show these additional structures.

The adaptive management framework largely describes the movement of information. Several boxes require expanded and explicit descriptions of responsibilities, authorities, and action plans that will need to be customized by each agency and amended both between and within years. Lines of responsibility and authority for each agency with sage-grouse and sagebrush ecosystem conservation obligations will be described and filed for each site and each year with the data manager.

The following descriptions by box number describe the adaptive management framework. The associated gant chart identifies calendar dates for completion of the annual activity cycle (Figure 4).

Box 1: The Technical Sub-Committee (TSC) shall integrate sage-grouse conservation actions into PMU-wide restoration efforts. Sage-grouse and sagebrush ecosystem conservation efforts will be carried out so as to be compatible with Standards for Land Health, particularly the Biodiversity Standard. The Northeast California Sage-Grouse Working Group (NCSGWG) will review TSC recommendations to integrate them into a program of PMU-wide priority actions and expenditures, in turn making recommendations to agencies as part of PMU-wide resource planning activities.

Boxes 2 and 3: The TSC will synthesize and interpret data on sage-grouse and sagebrush ecosystems status and trends; identify and periodically reassess conservation planning goals for the species and its habitat; reassess habitat rankings (Table 13); establish monitoring targets, intensity, and frequency compatible with the goals, to ensure that data collected appropriately measure progress toward program goals; and oversee data management efforts and production of data products, including reports, maps and other graphical representations of species and habitat information.

Boxes 4 and 5: The TSC will update the sage-grouse and sagebrush ecosystems knowledge base. Spatial and temporal aspects of monitoring will be adjusted through time as the information base builds in time series (some previously acquired data may prove less valuable than others and collection may be terminated; newly recognized conservation applications may require new or differently resolved monitoring data). This review will be done in consultation with other independent researchers.

Box 6: Each land management and state wildlife agency will gather annual monitoring data using standardized survey protocol and forms (Appendix J) in collaboration with other agencies or individuals party to the conservation agreement.

Boxes 7, 8, and 9: Data so gathered will be submitted to the Database Manager(s) (DM) for incorporation into the database. Display products that requires specific GIS capabilities may be produced by the DM in collaboration with BLM, CDFG, and NDOW. Data resulting from ongoing research projects will be submitted in the form of final reports and spatially explicit products compatible with the DM sage-grouse and sagebrush ecosystems database. A report with updated maps and tabular data will be provided to the TSC.

Box 10: Updated map information, newly filed research reports, and other available information will be reviewed by the TSC. Results of these deliberations will be communicated to the *NCSGWG and Washoe-Modoc Sage-Grouse Working Group (WMSGWG)* so that annual conservation planning actions, including prioritization of actions and funding requirements, can be identified.

Figure 3 Adaptive management framework and assignments

Boxes 11 and 12: Management planning, as noted above, will be carried out by each land management and state wildlife agency, and US Fish and Wildlife Service whose lands support sage-grouse and sagebrush ecosystems. Management planning on private lands shall be carried out in cooperation with amenable private landowners or their representatives, Natural Resources Conservation Service (NRCS) and applicable state agencies. The TSC members representing each agency will coordinate to maximize information transfer between those facilitating the advancement of the CS and those implementing management actions. The TSC members will assist in developing and reviewing all management, restoration, or other activities that may affect sage-grouse, its habitat, and sagebrush ecosystem health.

Figure 4 Timeline describing annual cycle of adaptive management actions

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1. Integrate sage-grouse and sagebrush ecosystem adaptive management into overall program. (TSC)												
2. Synthesize status and trends and report to NCSGWG & WMSGWG with recommended course of action and funding. (TSC)												
3. Revisit goals and milestones. (TSC)												
4. Revisit knowledge base and conceptual model. (TSC)												
5. Adjust spatial, temporal, and intensity aspects of monitoring. (TSC)												
6. Gather monitoring data. (BLM, CDFG, and NDOW)												
7. Submit compatible data to control database. (BLM, CDFG, and NDOW)												
8. Input data (Database Manager(s))												
9. Produce tabular and spatially explicit (mapped) data presentations. (DM)												
10. Analyze and interpret report. (TSC)												
11. Integrate management direction into work plan. (BLM, CDFG, NDOW, NRCS, USFWS)												
12. Carry out management actions. (BLM, CDFG, NDOW, NRCS, USFWS)												

II.H. IMMINENT EXTINCTION CONTINGENCY PLANS

A necessary component of any conservation strategy and/or adaptive management framework is to define the types and degree of actions to be taken when the number of populations and/or size of populations become significantly low (less than 300 total peak males on active leks within the PMU). This kind of pre-planning for future action is necessary for the following two reasons:

1. There may be insufficient time between the identification of an imperiled population and need to take action;
2. The description of possible actions to be taken to save the species will be known to all stakeholders in advance.

To attempt to address imminent extinction across the entire area covered by this Conservation Strategy will be too cumbersome and inaccurate.

Action: The agencies and Northern California Sage-Grouse Working Group shall include actions to address imminent extinction scenarios in the Lek Complex Implementation (Management) Plans that are called for within the Conservation Strategy.

II.I. STEWARDSHIP PROGRAM, PUBLIC EDUCATION, AND OUTREACH

Stewardship Program

Successful implementation of the CS will include the development of a stewardship program in which private landowners and public agencies may participate. The stewardship program will be designed to be a cooperative educational effort that encourages landowners and non-governmental entities to manage for conservation of sage-grouse and sagebrush ecosystems and, if possible, generate site-specific management plans. The NRCS and UC Cooperative Extension have volunteered to organize the Sage-Grouse Stewardship Group (S-GSG) which will be a non-profit group whose mission will be to encourage the conservation of sage-grouse and sagebrush ecosystems on private lands. Although this group has not yet been formed, S-GSG plays an integral role in communicating to those it represents the importance of conserving sage-grouse and sagebrush ecosystems on private lands. Establishing this foundation will assist in the promotion of the stewardship program.

Coordination with S-GSG will be through the TSC as assigned by the NCSGWG and WMSGWG. The TSC may attend S-GSG meetings, and provide technical assistance to the group. The TSC may also provide advice and assistance in development of stewardship plans for private landowners. The sage-grouse and sagebrush ecosystems monitoring efforts and analysis will be a helpful tool in measuring the effectiveness of the stewardship program. Upon completion and analysis of annual and archival monitoring efforts, the TSC will develop appropriate site-specific management recommendations. These recommendations may be used to assist landowners and non-government entities in development of their site-specific plans. The TSC will be responsible for establishing overall objectives, and the stewardship group will work with landowners and non-governmental entities to incorporate these objectives and recommendations into site plans.

Working cooperatively with and providing education to landowners is essential to an effective, successful Conservation Strategy. The S-GSG and TSC may organize public presentations, and generate brochures and newsletters for distribution to private landowners, and non-governmental entities to inform them of the stewardship program process. In addition, informational signs may be designed specifically for private landowners interested in participating in the program (Appendix I).

To encourage cooperation and promote the importance of land and resource stewardship, the S-GSG will publish examples of successful partnerships with landowners choosing to participate in the program. In addition to these

outreach efforts, the program will include a component that recognizes private landowners for their contributions to sage-grouse, and sagebrush ecosystems conservation. Forms of recognition may include awards for participation and cooperation, providing specialized signs for sage-grouse habitat on private lands, and public ceremonies. The NCSGWG and WMSGWG will determine the nature and feasibility of such incentives.

To determine the effectiveness of stewardship actions taken, it is essential to conduct monitoring on private lands that support sage-grouse and sagebrush ecosystems. While this monitoring does not have to be conducted by TSC members or other agencies, it is essential monitoring does occur. The TSC will provide requested assistance to private landowners with recognizing vegetation species, implementing the monitoring protocols, filling out data sheets, and reporting requirements.

Public Education and Outreach Plan

A public education and outreach program is an important component of the stewardship program. The overall focus of education and outreach will be directed toward reducing the amount and severity of human activities that degrade sage-grouse and their sagebrush ecosystem habitats. Various outreach methods can be utilized to guide the public and agencies in the implementation of their site-specific plans. The goals of the outreach plan will include communicating the following:

- sage-grouse are endemic to northeastern California and northwestern Nevada and are a sagebrush obligate;
- sage-grouse occur within a variety of sagebrush ecosystems which are heavily impacted by human activities;
- the biology of sage-grouse including habitat needs, its imperiled status, and its response to human disturbance;
- the significance of preserving the species and sagebrush ecosystems; and
- what must be done to protect sage-grouse and their habitats and how the public can assist in the conservation effort.

II.J. MONITORING SCIENCE AND RESEARCH AGENDA

In studies of habitat use, the primary concern of biologists is the identification, availability, and relative importance of resources (e.g., food, cover, water, or space) comprising wildlife habitat. Habitat or resource selection by animals may be of interest in evaluating habitat management and the impact of perturbations on wildlife populations. These studies have far reaching importance to wildlife management particularly as they relate to federally protected species (Morrison et al. 2001).

In resource selection studies, the availability of a resource is the quantity accessible to the animal (or population of animals) and the use of a resource is that quantity utilized during the time period of interest (Manly et al. 1993). When use of the resource is disproportionate to availability, then the use is considered selective (i.e., the animal is showing a preference for the resource).

Biologists often identify resources used by animals and document their availability (usually expressed as abundance or presence/absence). In most observational studies, it will be impossible to identify unique animals. However, using observations of animals seen from randomly or systematically chosen points, it is possible to use resource variables with known availability (e.g., vegetation) as predictor variables. Indirect measures are widely used for inventory and monitoring studies. Indicator species are used to index or represent specific environmental conditions or the population status of other ecologically similar species. They can be divided into two major categories: ecological indicators and management indicators. The concept was initially proposed by Clements (1920) to explain plant distributions based on environmental conditions, primarily soil and moisture. Vertebrates are also tied to specific environmental conditions as this is the basis for describing species' habitats (Block and Brennan 1993). Wildlife species, however, are vagile, and can adjust to variations in environmental conditions simply by moving or migrating. Thus, relationships between environmental conditions may be limited (Morrison 1986). If indicators are used, they should meet rigorous standards (Landres et al. 1988). These include: (1) clearly stating what the indicator defines about the environment or resource, (2) selection of indicators should be objective and quantitative, (3) all monitoring programs using indicators should be reviewed (a standard that should apply to all monitoring, not just indicators), and (4) indicators must be used at the appropriate spatial and temporal scales. Thus, use of indicators should not be simply a matter of convenience, but must be based on strong empirical evidence that supports their usage. Indicators of species' population success include evidence of successful reproduction, viable population sizes, over winter survival of resident species, and evidence of dispersal and gene flow among populations.

The monitoring program will include use of the archival and annual data sheets (Appendices J). The archival survey sheet is designed to record key physical and biotic environmental data that include habitat characteristics that are not likely to vary significantly during future conservation planning efforts. Vegetation variables would be collected to serve as baselines for comparison with future data. Archival data should be obtained in the field at 5-year intervals. The annual survey sheet is for population census and assessment of dynamic local habitat variables (such as invasion of nonnative plant species, changes in residual grass height) that may compromise habitat suitability for sage-grouse and sagebrush ecosystems. Not all data necessary to assess environmental variables such as year-to-year variation in weather and drought

cycles will be housed in a centralized database and linked to the sage-grouse/sagebrush ecosystems database.

Data sheets are compatible with the existing database to allow extension of ongoing analyses. This preserves the current, long-term record and allows further testing of hypotheses related to potential metapopulation dynamics and effects of population size on long-term persistence. Monitoring will be conducted according to established protocols identified in Appendix J.

A number of reductions, analyses, and presentations of annual monitoring data will be performed, including: 1) entry of data into a lek count spreadsheet (Appendix E) to allow summarization of lek counts, and calculation and reporting of persistence data; 2) entry of habitat monitoring results into a spreadsheet (Appendix D) to allow for tracking of habitat variables over time; 3) analysis and presentation of habitat restoration success or failure (Appendix G); and 4) development of a survey form and database of recreational disturbance from all surveyed sites.

In addition, new populations, including satellite occurrences adjacent to current leks and habitat, inactive leks becoming active, and historical leks becoming active will require that a new archival data sheet and subsequent annual data sheets be completed. Additional monitoring programs or amendments to current monitoring procedures will be developed to test the efficiency of site protections, management efforts, public education and outreach programs, and staff training procedures.

Research

The implementation of intensive and systematic monitoring protocols in addition to focused research will assist conservation managers to resolve data gaps essential to the overall, long-term Conservation Strategy. Pursuing additional information on the persistence of sage-grouse, their life history, habitat use, and aspects of sagebrush ecosystem ecology is valuable in a broad scientific context, and may assist in providing necessary guidelines for sage-grouse/sagebrush ecosystem conservation and restoration. Critical information on potential metapopulation structure and dynamics will be best gathered from experimental tracking of populations through time, as noted below.

The NCSGWG and WMSGWG will annually review potential funding and recommend priorities for research. The TSC, if so directed, will explore other funding opportunities for research on sage-grouse and sagebrush ecosystems.

The TSC will review design of experimental approaches, and both experimental research and monitoring protocols designed to support the CS will be reviewed periodically and adjusted to meet changing program needs. Consultation with

experts outside the TSC as well as colleges and universities, as needed, will be part of the TSC's approach to insuring high quality research and monitoring approaches and results. The following information needs are proposed in rough order of immediacy.

Persistence, Habitat Use, and Grazing Impacts on Nest Success

- Researchers need to test the hypothesis that the persistence of sage-grouse is primarily a function of habitat availability, competitive uses of the same habitat, and response to disease. This effort will require radio collaring at least 10% of the total projected population within each lek complex accompanied by daily monitoring of location, habitat being used, and mortality.

- Data found during the persistence monitoring must be complimented by follow-up studies concerning potential loss of nests and eggs to grazing by domestic livestock, and feral horses and burros. Radio telemetry locations can be used to locate active nests. These areas can then be monitored for impacts of competitive uses such as ungulate grazing activity.

- Radio telemetry data will allow the researchers to plot active habitat areas to be compared to randomly selected apparently similar habitat that is not being used by sage-grouse. This information should define subtle or obvious differences in habitat selection.

- Rapid response to mortality signals from radio collars should provide the researchers with an opportunity to determine the causes of morality, and what role disease plays in these deaths. The current concern with West Nile virus raises the imperative that losses due to disease be recorded as they happen, and not wait for peak male attendance at leks to drop precipitously before taking action.

Metapopulation dynamics

- Long term research is needed to determine the temporal and spatial extent of metapopulation dynamics necessary to maintain the genetic viability of sage-grouse within and between lek complexes.

Correlation of managing to meet and maintain Standards for Land Health while providing suitable sage-grouse habitat.

- A part of monitoring following descriptions of active habitat by researchers will be to determine the same site's status within the parameters of land health.

- A second step, after comparison of habitat criteria to land health criteria is a determination of whether sage-grouse are using a particular habitat area because it is all there is, albeit marginal, or is the habitat selected because it satisfies a preference within a large spatial offering of healthy habitats.

CHAPTER III Literature Cited

Aldridge, C. L., and R. M. Brigham. 2002. Sage-Grouse nesting and brood habitat in southern Canada. Journal of Wildlife Management 66(2):433-444.

Brackley, G. 2003. NRCS Personal Communication.

Barrington, M.R., and G.N. Back. 1984. Sage-grouse research: population dynamics. Pp. 43-146. *In*: P.C. Lent and R.E. Eckert, Jr. (eds.) Progress report for 1983, Saval Ranch research and evaluation project. Univ. Nevada Reno, Renewable Resource Center, Reno, NV.

Bates, J., R. F. Miller, and T. S. Svejcar. 2000. Understory dynamics in cut and uncut western juniper woodlands. J. Range Manage. 53:119-126.

Benedict, N. G., T. W. Quinn, S. Taylor. 2001. A Genetic Survey of Nevada Sage-grouse Populations. University of Denver.

Benedict, N. G., S. J. Oyler-McCance, S. E. Taylor, C. E. Braun, and T. W. Quinn. 2003. Evaluation of the eastern (Centrocercus urophasianus urophasianus) and western (Centrocercus urophasianus phaios) subspecies of sage-grouse using mitochondrial control-region sequence data. Conservation Genetics 4: 301-310.

Block, W. M., and L. A. Brennan. 1993. The habitat concept in ornithology: Theory and applications. *In* D. M. Power (ed.). Current Ornithology, vol. 11, pp. 35-91. Plenum Pr., New York.

Blus, L. J., C. S. Staley, C. J. Henny, G. W. Pendleton, T. H. Craig, E. H. Craig, and D. K. Halford. 1989. Effects of organophosphorus insecticides on sage-grouse in southeastern Idaho. J. Wildl Manage 53:1139-1146.

Braun, C. E. 1986. Changes in sage-grouse lek counts with advent of surface coal mining. Proceedings, issues and technology in the management of impacted western wildlife. Thorne Ecological Institute 2: 227-231.

Braun, C. E. 1998. Sage-grouse declines in western North America: what are the problems? Proceedings of Western Association of Fish and Wildlife Agencies 78: 139-156.

Braun, C. E., O. O. Oedekoven, and C. L. Aldridge. 2002. Oil and gas development in western North America: effects on sagebrush steppe

avifauna with particular emphasis on sage-grouse. Transactions of the North American Wildlife and Natural Resources Conference 67:337-349.

Bunting, S. C., B. M. Kilgore, and C. L. Bushey. 1987. Guidelines for prescribed burning sagebrush-grass rangelands in the northern Great Basin. USDA Forest SERV. Gen. Tech. Report INT-231, Ogden, UT.

California Department of Fish & Game. 2004. Fish and Game Code 2004 California Edition. Law Tech Publishing Company Ltd. San Clemente, CA.

_____. 2004. Title 14 of the California Code of Regulations (CCR). Law Tech Publishing Company Ltd. San Clemente, CA

California Department of Public Health. 2004. E-com. WNv impacts to sage-grouse.

Call, M. W. 1979. Habitat requirements and management recommendations for sage-grouse. USDI-BLM Denver Serv. Center Tech. Note 330.

Call, M. W., and C. Maser. 1985. Wildlife habitats in managed rangelands-the Great Basin of southeastern Oregon. Sage-grouse. USDA Forest Serv. Gen. Tech. Rep. PNW-187. Portland, OR.

Clements, F. E. 1916. Plant succession: an analysis of the development of vegetation. Pub. 242. Washington, D.C.: Carnegie Institute of Washington.

Clements, F. E. 1920. Plant indicators. Carnegie Institute, Washington, D.C.

Connelly, J.W., and C.E. Braun. 1997. Long-term changes in sage-grouse *Centrocercus urophasianus* populations in western North America. Wildl. Biol. 3:229-234

Connelly, J. W., K. P. Reese, W. L. Wakkinen, M. D. Robertson, and R. A. Fischer. 1994. Sage-grouse ecology report. Idaho Dept. of Fish Game, Job Completion Report W-160-R-19, Subproject 9, Boise, ID

Connelly, J.W., M.A. Schroeder, A.R. Sands, and C.E. Braun. 2000. Guidelines to manage sage-grouse populations and their habitats. Wildl. Soc. Bull. 28: 967-985.

Connelly, J. W., K. P. Reese, M. A. Schroeder. 2003. Monitoring of Greater sage-grouse habitats and populations. College of Natural Resources Experiment Station. Moscow, Idaho.

Crawford, et al 2004 (in Press) Ph. D. thesis

Dyksterhuis, E. J. 1949. Condition and management of rangeland based on quantitative ecology. J. Range Manage. 2:104-115.

Evans, C. C. 1986. The relationship of cattle grazing to sage-grouse use of meadow habitat on Sheldon National Wildlife Refuge. Masters thesis. Univ. of Nevada, Reno, NV.

Federal Register. 2000. Unified federal policy for a watershed approach to federal land and resource management; Notice. Volume 65, No. 202/Wednesday, October 18, 2000. P. 62566-62572.

_____. 2003. Policy for evaluation of conservation efforts when making listing decisions. Volume 68, No. 60, Friday, March 28, 2003. P. 15100-15115.

_____. 2004. Endangered and threatened wildlife and plants; 90-day finding for petitions to list the Greater sage-grouse as threatened or endangered. Volume 64, No. 77/Wednesday April 21, 2004. P. 21484-21494.

Fischer, R. A., K. P. Reese, and J. W. Connelly. 1996. An investigation on fire effects within xeric sage-grouse brood habitat. J Range Manage. 49:194-198.

Friedel, M. H. 1988. Range condition and the concept of thresholds. P. 1-3. *In:* Vol. I, Abstracts, 3rd Intern. Rangeland Congr. Range Manage. Soc., India.

Friedel, M. H. 1991. Range condition assessment and the concept of thresholds. A Viewpoint. J. Range Manage. 44: 422-426.

Goodrich, S., D. Nelson, and N. Gale. 1999. Some features of Wyoming big sagebrush communities on gravel pediments of the Green River Daggett County, Utah. Pp. 159-167. *In*: D.E. Mc Arthur, W.K. Ostler, D.L. Wambolt (comps.), Shrubland ecotones. USDA For. Ser. Proc. RMRS-P-11.

Gregg, M.A. 1991. Use and selection of nesting habitat by sage-grouse in Oregon. M.S. thesis. Oregon State Univ., Corvallis, OR.

Hall, F. 1995. Determining Changes in Abundance of Sage-grouse *Centrocercus urophasianus* in California. California Department of Fish and Game.

Hsiao, T. H. 1986. Biology and demography of the sagebrush defoliator and its impacts on big sagebrush. Pages 191-98 *in* E. D. McArthur, and B. L. Welch, comps. Proceedings of the symposium on the biology of *Artemisia* and *Chrysothamnus*. USDA, Forest Service Gen. Tech. Report INT-200, Ogden, Utah.

Hulet, B. V. 1983. Selected responses of sage-grouse to prescribed fire, predation, and grazing by domestic sheep in southeastern Idaho. Thesis, Brigham Young Univ., Provo, UT.

Hurd, L. E., and L. L. Wolf. 1974. Stability in relation to nutrient enrichment in arthropod consumers of old-field successional ecosystems. Ecol. Monogr. 44: 465-482.

Knock, S. T., D. S. Dobkin, J. T. Rotenberry, M. A. Schroeder, W. M. Vander Haegen, and C. Van Riper III. 2003. Teetering on the edge or too late? Conservation and research issues for avifauna of sagebrush habitats. Condor 105:611-634.

Jensen, M. E. 1989. Soil characteristics of mountainous northeastern Nevada sagebrush community types. Great Basin Nat. 49:469-481.

Johnsgard, P. A. 1973. Grouse and quails of North America. Univ. of Nebraska Press, Lincoln.

Kindschy, R. R. 1991. Pristine vegetation of the Jordan Crater Kipukas: 1978-91. USDI, Bureau of Land Management, Vale, OR.

Klebenow, D.A. 1985. Habitat management for sage-grouse in Nevada. World Pheasant Assoc. J. 10:34-46.

Landres, P. B., J. Verner, and J. W. Thomas. 1988. Ecological uses of vertebrate indicator species: A critique. Conserv. Biol. 2:316-328.

Laycock, W. A. 1978. Factors affecting choice of management strategies within the sagebrush ecosystem. P. 230-236. *In:* The sagebrush ecosystem: A symposium. College of Nat. Resource. Utah State Univ., Logan.

Laycock, W. A. 1991. Stable states and thresholds of range condition on North American rangelands – viewpoint. J. Range Manage. 44:427-433.

Longland, W. S., and J. A. Young. 1995. Landscape diversity in the western Great Basin. Pages 80 – 91 *In* N. E. West, ed. Biodiversity of

Rangelands. College of Natural Resources, Utah State University, Logan, Utah.

Manley, B. F. J., L. McDonald, and D. Thomas. 1993. Resource selection by animals: Statistical design and analysis for field studies. Chapman and Hall, London.

Margalef, R. 1969. On certain unifying principles in ecology. Amer. Nat. 97: 357-374.

Miller, R. F., and L.L. Eddleman. 2001. Spatial and temporal changes of sage-grouse habitat in the sagebrush biome. Oregon State Univ. Agric. Experiment Sta. Tech. Bull. 151, Corvallis, OR.

Miller, R. F., and J. A. Rose. 1999. Fire history and western juniper encroachment in sagebrush steppe. J. Range Manage. 52:550-559.

Miller, R. F., T. J. Svejcar, and J. A. Rose. 2000. Impacts of western juniper on plant community composition and structure. J. Range Manage 53: 574-585.

Miller, R.F. and R.J. Tausch. 2001. The role of fire in juniper and pinyon woodlands: a descriptive analysis, p. 15-30. *In*: K.E.M. Galley and T.P. Wilson (eds.), Proceedings of the Invasive Species Workshop: the role of fire in the control and spread of invasive species. Misc. Pub. No. 11, Tall Timbers res. Sta. Tallahassee, FL.

Morrison, M. L. 1986. Birds as indicators of environmental change. Curr. Ornithol. 3:429-451.

Morrison, M. L., W. M. Block, M. D. Strickland, and W. L. Kendall. 2001. Wildlife study design. Springer, New York.

Myers, O. B. 1992. Sage-grouse habitat enhancement: Effects of sagebrush fertilization. Ph.D. Dissertation. Colorado State University.

National Research Council. 1994. Rangeland health: New methods to classify, inventory, and monitor rangelands. National Academy Press. Washington, D.C.

Neel, L. A. 1980. Sage-grouse response to grazing management in Nevada. M. S. thesis. Univ. of Nevada, Reno, NV.

Nelle, P. J., K. P. Reese, and J. W. Connelly. 2000. Long term effects of fire on sage-grouse habitat. J. Range Manage 53: 586-591.

Nevada Department of Wildlife. 2005. Nevada and eastern California sage-grouse conservation plan implementation and coordination (Supplement to Chapter 4, Section 4.2.1) process for submitting new projects and refining worksheets in appendix F. Reno, NV

Passey, H. B., W. K. Hugie, E.W. Williams, and D.E. Ball. 1982. Relationships between soil, plant community, and climate on rangelands of the Intermountain west. USDA, Soil Conservation Ser., Tech. Bull. No. 1669.

Patterson, R. L. 1952. The sage-grouse in Wyoming. Sage Books, Denver, CO.

Pellant, M., D. A. Pyke, P. Shaver, and J. E. Herrick. 2000. Interpreting indicators of rangeland health version 3. Interagency Tech. Ref. 1734-6. Bureau of Land Manage. Denver, CO.

Perryman, B. L., A. M. Maier, A. L. Hild, and R. A. Olson. 2001. Demographic characteristics of 3 *Artemisia tridentata* Nutt. Subspecies. J. Range Manage 54: 166-170.

Popham, G. P., and R. J. Gutierrez. 2003. Greater sage-grouse *Centrocercus urophasianus* nesting success and habitat use in northeastern California. Wildl. Biol. 9:327-334.

Pyle, W. H., and J. A. Crawford. 1996. Availability of foods of sage-grouse chicks following prescribed fire in sagebrush-bitterbrush. J. Range Manage. 49:320-324.

Rasmussen, D. I., L. A. Griner. 1938. Life history and management studies of the sage-grouse in Utah, with special reference to nesting and feeding habits. Trans. North Amer. Wildlife Conf. 3:852-864

Robertson, J. H. 1971. Changes on a grass-shrub range in Nevada ungrazed for 30 years. J. Range Manage. 24: 397-400.

Robertson, M. D. 1991. Winter ecology of migratory sage-grouse and associated effects of prescribed fire in southeastern Idaho. M. S. thesis. University of Idaho, Moscow.

Shaffer, M. 1988. Minimum viable populations: Coping with uncertainty. *In* M. E. Soule (ed.) Viable populations for conservation. Cambridge Univ. Press, New York.

Swanson, S. 2002. Comments addressing the draft Buffalo - Skedaddle PMU habitat risk matrix. Email message 10/21/02.

Tausch, R. J., P. E. Wigand, and J. W. Burkhardt. 1993. Viewpoint: Plant community thresholds, multiple steady states, and multiple successional pathways; legacy of the Quaternary. J. Range Manage 46:439-447.

Tirhi, Michelle J. 1994. Draft Washington state management plan for sage grouse. Washington Dept. of Fish and Wildlife, Olympia, Washington.

Tisdale, E. W. 1994. Great Basin region: sagebrush types. Pp. 40-46. *In*: T. N. Shiflet (ed.) Rangeland cover types. Soc. Range Manage., Denver, CO.

Trimble, S. 1989. The sagebrush ocean, A natural history of the Great Basin. University of Nevada Press. Reno, NV

Tueller, P. T. 1973. Secondary succession, disclimax, and range condition standards in desert shrub vegetation. P. 57-65. *In:* D.N. Hyder (ed). Arid shrublands. Soc. Range Manage, Denver, CO.

USDA, Natural Resources Conservation Service. 1974. Soil survey Surprise Valley-Home Camp area, California-Nevada. Wash. D.C.

USDA, _____. 1990. Soil survey of Washoe County, Nevada, central part. Reno, NV

USDA._____. 2001. California soil survey 608. Susanville, CA

USDI, Bureau of Land Management. 1994. Process for assessing proper functioning condition for lentic riparian – wetland areas. Technical Reference 1737 – 11, BLM/SC/ST-94/008+1737. Denver, CO.

USDI, _____. 1996. Sampling vegetation attributes. Interagency Technical Reference. BLM/RS/ST-96/002+1730. Denver, CO.

USDI._____. 2000. Approval of northeastern California and northwestern Nevada standards for livestock grazing. Memorandum. Approval of Record of Decision issued by the California BLM State Director June 1999. Bureau of Land Manage., Washington D.C.

USDI _____. 2001. 6840 – Special status species management. BLM Manual Rel. 6-121. Wash. D.C.

USDI._____. 2002. Idaho BLM response to “Weakness of the draft framework to assist in making sensitive species habitat assessments for BLM-administered public lands in Idaho. Written by Chad Gibson and John Romero. Boise, ID.

USDI._____. 2003. DRAFT Sage-Grouse Habitat Conservation Strategy. Bureau of Land Management. Boise, ID.

Vallentine, J. F. 1989. Range development and improvements. Third Ed. Academic Press, San Diego, CA.

Vermeire, L. T., and R. L. Gillen. 2001. Estimating herbage standing crop with the visual obstruction in tall grass prairie. J. Range Manage. 54: 57-60.

Young, J. A., R. E. Eckert, and R. A. Evans. 1979. Historical perspectives regarding the sagebrush ecosystem. P. 1-13. *In:* The sagebrush ecosystem. A Symposium. Utah State Univ., Logan.

Young, J. A., R. A. Evans, and P. T. Tueller. 1976. Great Basin plant communities-pristine and grazed. P. 187-215. *in* R. Elston and P. Headrick *eds.* Holocene environmental change in the Great Basin. Nevada Archives Survey, Research Paper No. 6., University of Nevada, Reno, NV.

Waichler, W. S., R. F. Miller, and P. S. Doescher. 2001. Community characteristics of old-growth western juniper woodlands. J. Range Manage. 54: 518-527

Walker, B.L., D.E. Naugle, K.E. Doherty, and, T.E. Cornish. 2004. Wildl. Soc. Bull., in press.

Walsh, D. P. 2002. Population Estimation Techniques for Greater Sage-grouse. Masters thesis. Colorado State University, Fort Collins, Colorado.

Welch, B. L., C. Criddle. 2003. Countering Misinformation Concerning Big Sagebrush. USDA Forest Service Rocky Mountain Research Station Research Paper RMSR-RP-40.

West, N. E. 1983. Western Intermountain sagebrush steppe. Pp. 351-397. *In:* N.E. west (ed.) Ecosystems of the World 5: Temperate deserts and semi-deserts. Elsevier Scientific Publishing Company, New York, NY.

West, N. E., and T. P. Yorks. 2002. Vegetation responses following wildfire on grazed and ungrazed sagebrush semi-desert. Journal of Range Management 55: 171-181.

Westoby, M., B. Walker, and I. Noy-Meir. 1989. Opportunistic management for rangelands not at equilibrium. J. Range Manage. 42: 266-274.

Winward, A.H., and E.D. McArthur. 1995. Lahontan sagebrush *Artemisia arbuscula ssp. longicaulis:* a new taxon. Great Basin Nat. 55: 151-157.

Winward, A.H. 2001. Presentation at Pinedale, Wyoming to Wyoming Sage-grouse Conservation Planning Group.

IV. Appendices

A. PROPOSED/COMPLETED ACTIONS FOR HIGH PRIORITY SITES

B. BIOLOGICAL METHODS SECTION

C. PROJECT REVIEW GUIDELINES

D. SUMMARY OF HABITAT ASSESSMENT AND MONITORING

E. SUMMARY OF LEK COUNTS AND PERSISTENCE DATA

F. STANDARDS FOR LAND HEALTH, GRAZING AND OHV GUIDELINES

G. HABITAT RESTORATION MONITORING DATA

H. REGULATORY AUTHORITY AND ENFORCEMENT GUIDELINES

I. SAGE-GROUSE LEK AND OTHER HABITAT INFORMATIONAL SIGNS FOR PUBLIC LANDS AND PRIVATE LANDS

J. SURVEY PROTOCOLS AND ARCHIVAL OF ANNUAL DATA SHEETS

K. NCSGWG AND TECHNICAL SUB-COMMITTEE MEMBERS

L. INCENTIVE PROGRAMS FOR PRIVATE LANDS

Appendix A: Proposed and Completed Actions for High Priority Habitats

Proposed and Completed improvement, emergency stabilization and rehabilitation, and maintenance activities on publicly managed high priority habitats.

PROPOSED ACTIONS

Site Name:	***Spencer RX***
Location:	Intersection of Spencer Creek Road and Skedaddle Road, Spencer Creek Calif./Nev. 7.5" Quad.
Status:	High Priority (Skedaddle Lek Complex)
Ownership/Management:	BLM – Eagle Lake Field Office
Management Concerns:	Conversion of site from native vegetation to cheatgrass.
Proposed Actions, 2005:	Complete spring and fall prescribed burn of 144 acres. Seed native Wyoming sagebrush, perennial grass, and forbs with a rangeland drill in late fall of 2005. Construct an enclosure around the treated area.
Issues:	Within Wilderness Study Area
Site Name:	***Cold Springs Mountain***
Location:	
Status:	High Priority (Dill Field Lek Complex)
Ownership/Management:	BLM – Alturas Field Office
Management Concerns:	Site dominated by decadent mountain big sagebrush with little recruitment.
Proposed Actions, 2004:	Complete preparation work for burning of 200 acres.
Proposed Actions, 2005:	Complete prescribed fire.

	Drill - seed burn with native mountain big sagebrush during the fall. Enclose the burn with a fence in late fall 2005.
Site Name:	**Little Mud Flat 2005 RX**
Location:	TBD
Status:	BLM – Eagle Lake Field Office
Management Concerns:	Site dominated by dead sagebrush and cheatgrass.
Proposed Actions: 2005:	Complete treatment of site either through prescribed fire or herbicide treatment. Complete seeding of the treated site with local native sagebrush, perennial grass, and forbs. Complete fencing of the treatment area to protect from grazing until Eagle Lake Field Office ID Team makes a recommendation for removal of the fence.
Site Name:	**Smoke Creek Road 2005 RX**
Location:	TBD
Status:	BLM – Eagle Lake Field Office
Management Concerns:	Site dominated by dead sagebrush, cheatgrass, and medusahead.
Proposed Actions: 2005:	Complete treatment of site either through prescribed fire or herbicide treatment. Complete seeding of the treated site with local native sagebrush, perennial grass, and forbs. Complete treatment of a portion of the site with hydromulching in an effort to determine if use of a mulch accelerates recovery. Complete fencing of the treatment area to protect from grazing until Eagle Lake Field Office ID Team makes a recommendation for removal of the fence.
Site Name:	**Madeline Plains Radio Telemetry Project**

Location:	Capture of sage-grouse for mounting of radios will occur on leks surrounding the Madeline Plains.
Status:	BLM – Alturas and Eagle Lake Field Offices
Management Concerns:	Many sage-grouse are present on and around the Madeline Plains during the summer months. This is an attempt to determine where these birds are coming from. These data can also be used to determine if West Nile virus is occurring in these sage-grouse.
Proposed Actions:	Capture birds and place collars on them during the spring of 2005. Perform radio telemetry tracking of collared birds beginning in 2005 and ending in 2008.

Site Name:	**Dodge Spring Weed Treatment**
Location:	Dodge Spring – 72 acres (Dill Field)
Status:	BLM – Alturas Field Office
Management Concerns:	Site is beginning to be dominated by Scotch thistle to the detriment of brood rearing habitat.
Proposed Actions: 2005:	Complete treatment of site either through contract with Modoc County for aerial spraying followed by hand spraying.

COMPLETED ACTIONS

Site Name:	***Sage-Grouse Radio Telemetry Study***
Location:	Lassen County, California
Status:	High Priority (Lek Complexes south of Termo, California and East of Highway 395)
Ownership/Management:	CDFG/Population – Habitat Use
Management Concerns:	Determination of active sage-grouse habitat, seasonal sage-grouse movements, and movements in relation leks.
Completed Actions, 2004:	Publication entitled: Greater sage-grouse *Centrocercus urophasianus* nesting success and habitat use in northeastern California, by Gail P. Popham and R. J. Gutiérrez, in Wildlife Biology 9:4 (2003). Information provided in this publication was used to develop management criteria for nesting habitat within the PMU.

Appendix B: Biological Methods Section

NOTE: Biological methods commonly used for gathering information concerning sage-grouse populations and habitats are summarized in this section. More complete descriptions will be provided in lek complex management implementation plans. Biological methods are based on current accepted practices and established agency technical references.

Populations:

Leks Counts:

HOW TO COUNT A SAGE GROUSE LEK

WHY ARE WE DOING THIS?

OBJECTIVE: Peak male attendance at ALL active leks for
A. Trend and
B. Population estimate

Equipment Needed*:*
1. Warm clothing
3. Maps (the correct maps for the leks being counted)
4. Data sheets (list of lek codes and coordinates,
5. A GPS (set preferences, default is "NADCONUS 27")
6. Vehicle (4wd, or ATV) Fuel tank should be full. Due to possibility of being stuck chains or tow straps should be in vehicle.
7. Binoculars / spotting scope
8. Pen/pencil
9. Cell phone
10. A good attitude and, remember, **If it's worth doing, do it right!**

LOCATION:

Lek codes, locations in UTMs, drawing maps on data sheet

Definitions for Lek Counting:

1. Two or more males displaying (strutting) = "a lek"

2. A lek count is:
   A count of **MALES** (displaying or strutting **or not**) and
   A count of any females that may be present but this is secondary.

Questions and Answers:

Q. What do I do if it's raining/snowing/blowing?
A. Count the number of birds as best as you can, and plan for an additional visit once the precipitation stops.

Q. How close can I get?
A. Do not drive or walk to within less than 150 meters (See Lek Form).

Q. When do leks get counted?
A. Start approximately one-half hour before sunrise, do not spend too much time counting – count several times until no new observations are made – usually not longer than 15 – 20 minutes per lek. Do not count 1.5 hours after sunrise.

Q. How often do I count?
A. Counts of active leks must be made at least 4 times at 5 to 8 day intervals. Highest counts are almost always between March 15 and May 1st.

Q. What are disturbances?
A. Any activity or presence that causes the strutting birds to stop strutting or leave the lek prematurely. These include, but are not limited to; coyotes, raptors, you, pronghorn, livestock, or wild horses and burros running through the lek, approaching too close, etc.

Q. What is a lek?
A. Any site where two or more sage-grouse are strutting.

Q. What is a satellite lek?
A. Satellite leks are sites greater than 100 meters from the identified lek where two or more sage-grouse are strutting.

Q. What do I do if I have a "new" active site, or lek not previously identified?
A. If you have a new active site, not at a lek site already identified, take a GPS reading at the center of the strutting birds when they are gone. The (arbitrary) criterion for a "new" site is that it must be at least 100 meters from any previously active site.

Q. Can we record two or more leks on the same Lek Data Form?
A. NO!

Sage Grouse Lek Observation Data Sheet

DATE: Observer:

LEK NAME:

ID	Place Name	UTM X	UTM Y	Status	Males	Females	Unk.	Start Time	End Time

(Status: Active, Inactive, Not Checked)

COUNTY: USGS QUAD:

LAND STATUS (Public or Private):

TEMPERATURE (Deg.. F) WIND (Dir. & Speed)

CLOUD COVER (in 10ths) PRECIP
(None, Fog, Rain, Snow)

GROUND MOISTURE CONDITION (Dry, Wet, Snow)

DISTURBANCES (Coyote, Raptor, Other)

COMMENTS:

INSTRUCTIONS:

- Arrive near grounds approximately 45 minutes before sunrise.
- DO NOT DRIVE VEHICLE CLOSER THAN 150 METERS TO STRUTTING GROUND.
- Listen for sage grouse vocalizations to confirm exact location of lek.
- Observe from inside the vehicle when possible. Be very cautious when out of vehicle.
- Using binoculars or spotting scope, scan lek and count the birds by sex.
- Repeat counting procedure until peak count is made.
- Proceed to next lek.
- Do not start counting any new leks 1.5 hours after sunrise.

Other sightings:

ID	Place Name	UTM X	UTM Y	Status	Males	Females	Unk.	Start Time	End Time

NOTE: The Lek Data Form is normally on one side of a single sheet of paper.

Habitat:

Eagle Lake, Alturas, and Surprise Field Offices

1. Nesting Habitat

Popham and Gutiérrez (2003) describe sage-grouse major habitat features in northeastern California as:

- ✓ 13% sagebrush cover within the habitat area.
- ✓ Total shrub height at nest site = 65.5 cm +/- 4.7 cm (26" +/- 2")
- ✓ Residual Grass Height at nest site = 22.1 cm +/- 2.7 cm (9" +/- 1"). The NCSGWG established 7" as acceptable at this time.
- ✓ Visual Obstruction Height at nest site = 40.2 cm +/- 2.6 cm (16" +/- 1")
- ✓ Average Distance from lek for successful nesting = 3,588m +/- 811m (2.2 miles +/- 0.5 miles)

All methodology is explained in depth in USDI (1996) and Robel et al. (1970).

a. Overall shrub and rock cover will be gathered using the step point method for cover data collection. There will be four transects per lek. Each transect will move from the lek in one of the cardinal directions (north, south, west, and east).

b. There will be 200 points of cover data collected with each point being approximately 30 meters apart. Data collected will include shrub, forb, and rock cover.

c. At each point height of the sagebrush nearest to the point will be collected. If the sagebrush is between 70 to 61 cm. in height, residual grass height, and visual obstruction data will be collected. If the sagebrush is less than or greater than the accepted height the other data will not be collected.

d. Residual grass height will be collected at the four cardinal directions within the drip line of the sagebrush canopy, and averaged into an average height.

e. Visual obstruction height will be gathered using a “Robel” pole viewed from a distance of 4.5 meters (15’) and a height o 150 – 160 cm (59” – 63”).

f. These data will be summarized by lek, by year, and stored with the Wildlife Biologist of the Field Office within which the data was gathered.

2. Brood-Rearing and Winter Habitat

Habitat monitoring data will be collected using step point cover analysis to a confidence interval of 80% +/- 10% within each known habitat area. Initial surveys to describe the habitat will be made using the natural resources Interdisciplinary (ID) Team performing a Land Health Assessment consistent with Technical Reference 1734-6 (Pellant et al. 2000), including a complete species list, cover per species, and a minimum of five height measurements per species. Riparian/wetland initial habitat analysis will be completed by an ID Team consistent with Technical Reference 1737-11 (USDI 1994), with the addition of a complete plant list, cover by species, and a minimum of five height measurements per species.

NOTE: If habitat rehabilitation activities occur within these habitats rehabilitation success will be monitored as described in Appendix G until the site has recovered to the point where it can be monitored as described above.

Appendix C: Project Review Guidelines

The BLM, CDFG/NDOW project review process, as it relates to sage-grouse, sage-grouse habitat, and sagebrush ecosystem health, is described below. NOTE: This process is available to private landowners, as needed.

Step 1. Determine if the proposed project may affect sage-grouse, sage-grouse habitat or sagebrush ecosystem health. Effects of the proposed project include direct and indirect effects of actions taken that affect sage-grouse, active or historical sage-grouse habitat, or sagebrush ecosystem health.

- If sage-grouse, sage-grouse habitat or sagebrush ecosystem health are not contained in, or may be affected by the action, standard NEPA/CEQA analysis is completed by the initiating party, and the project is completed.
- If sage-grouse, sage-grouse habitat, or sagebrush ecosystem health may be affected by the proposed action, go to Step 2.

Step 2. Determine if the proposed action will adversely affect sage-grouse, sage-grouse habitat, or sagebrush ecosystem health.

a. Complete on-site project review during season of use to determine potential for adverse affect.

- If there is no apparent adverse affect, complete all NEPA/CEQA documentation necessary to facilitate a decision record to approve the project.
- If there is going to be an adverse affect to sage-grouse, sage-grouse habitat, or sagebrush ecosystem health, got to Step 3.

Step 3. When it is determined there will be an adverse affect to sage-grouse, sage-grouse habitat, or sagebrush ecosystem health, a site specific management plan shall be developed. The plan shall include, but not be limited to:

a. Project modification to prevent any adverse impact to sage-grouse, sage-grouse habitat, or sagebrush ecosystem health.

b. Projects that cannot mitigate the potential of jeopardizing the continued existence of sage-grouse, sage-grouse habitat, or sagebrush ecosystem health to an insignificant level shall not be approved.

c. Monitoring during project application.

d. A long-term management plan for the site including, but not limited to, placement of educational signage, possible development of landscape

practices guidelines, and access agreement for annual site surveys, if the project is on public/private lands.

e. If previously unknown sage-grouse activity is discovered during a pre-application survey, or during project application, a site specific plan will be required as in Step 3.d.

Projects proposed that are specific to Nevada will follow the *Process For Submitting New Projects* developed by the Sage-grouse Conservation Team in Nevada (NDOW 2005).

Appendix D: Summary of Habitat Assessment and Monitoring

Assessment of habitat actually being utilized by sage-grouse was begun during CDFG's radio telemetry project within Lassen County, California and a portion of Washoe County, Nevada in 1998. Habitat data were collected in nesting and brood-rearing habitat being utilized by the radio collared birds. Results of nesting habitat assessment have been published (Popham and Gutierrez 2003), and are being applied to this Conservation Strategy. Summary information from Popham and Gutierrez (2003) is displayed in Tables 14 and 15.

Assessment

Table 14 Mean habitat characteristics of successful, unsuccessful nests, and random sites in Lassen County, California (from Popham and Gutierrez 2003).

Variable	Successful Nests	Unsuccessful Nests	Random Sites
Perennial grass cover (%)	14	11	11
Litter cover (%)	8	11	10
Bare ground cover (%)	23	26	29
Rock cover (%)	28	14	18
Sagebrush cover (%)	13	16	15
Other shrub cover (%)	6	5	5
Total shrub height cm (inches)	65.5 (26")	49.2 (19")	49.1 (19")
Perennial grass height cm (inches)	22.1 (9")	24.2 (9.5")	18.2 (7")
Visual obstruction height cm (inches)	40.2 (16")	32.5 (13")	31.9 (12")

Table 15. Plant species used for successful and unsuccessful nesting. N = number of nests in each category, and % = percent of nests relative to the number of total successful (N=31) or unsuccessful (N= 57) nests (from Popham and Gutierrez 2003).

Plant Species	Successful Nests		Unsuccessful Nests	
	N	%	N	%
Artemisia arbuscula (Low sagebrush)	1	3.2	3	5.3
A. tridentata wyomingensis Wyoming big sagebrush	16	51.6	36	63.2
Chrysothamnus spp. Rabbitbrush	1	3.2	5	8.8
Ephedra viridis Mormon tea	2	6.5	0	0
Purshia tridentata Antelope bitterbrush	4	12.9	0	0

Tetradymia glabrata Littleleaf horsebrush	5	16.1	10	17.5
Leymus cinereus Basin wildrye	0	0	2	3.5
Pseudoroegneria spicata Bluebunch wheatgrass	2	6.5	1	1.8
Non – *A. tridentata* nests	15	48.4	21	36.8
Total number of nests	31		57	

Brood-rearing habitat data collected during CDFG's radio telemetry project are currently being analyzed.

Indirect habitat information is being collected during BLM's Land Health Assessment (LHA). To date 278 total sites have been assessed representing 215,605 acres. Approximately 220 sites representing a total of 199,000 acres are within sage-grouse habitat. Data gathered at each site is cover and median height by species, and total grass, forb and shrub cover. These data are currently being evaluated against Popham and Gutierrez's findings for nesting cover. Maps of sage-grouse distribution such as the one for Shaffer and Chalk Bluff Leks, attached, help focus BLM's analysis of LHA data within occupied habitat.

Preliminary review of habitat data gathered in active brood-rearing areas indicates that prickly lettuce (*Lactuca serriola*) is a favorite of sage-grouse in the northern Tablelands. Monitoring will have to include analysis of whether this introduced annual forb has replaced a preferred native forb, or has the presence of prickly lettuce helped make this a favored area?

Monitoring

Prioritization of monitoring will follow the advice offered by the National Research Council (1994). Habitats that are at risk of becoming unhealthy will be monitored most heavily. Healthy habitats will be second in priority, and unhealthy habitats (those that have crossed a threshold) will be monitored as time is available. By following this priority criteria sage-grouse habitat that should respond to treatment will be addressed first, and healthy habitat will be monitored to insure continued health. Unhealthy habitat will be recovered as opportunities arise such as emergency stabilization and rehabilitation following wildland fires.

Appendix E: Summary of Lek Counts and Persistence Data

Summaries are presented in tabular format. If there are questions as to how the data was provided to build these tables please refer to Section II.C.

2004

Table 16. Preliminary changes in peak male attendance on Index leks, 2003 vs. 2004

Index Lek	2003 Peak	2003 Number of Counts	2004 Peak (through 5/05/04)	2004 Number of Counts	Change in peak males	Percent Change in Peak Males
East Lassen						
Chalk Bluff	31	7	50	6	+19	+61%
Skedaddle	80	8	95	6	+15	+19%
Gilman	32	8	58	5	+26	+81%
East Side	13	5	9	3	-4	-31%
Shinn Ranch	72	6	88	4	+16	+22%
Telephone	0	4	0	5	-	-
Hall Springs	16	6	37	4	+21	+131%
Subtotal	**244**	**48**	**337**	**38**	**+93**	**+38%**
Central Lassen						
Shaffer Mtn.	14	7	22	10	+8	+57%
Little Black's Mtn.	41	5	40	6	-1	-2%
Horse Lake	0	3	0	2	-	-
Grasshopper	8	5	10	7	+2	+25%
Spanish Springs	26	8	23	6	-3	-12%
Subtotal	**89**	**28**	**95**	**31**	**+6**	**+7%**
TOTAL	**333**	**76**	**432**	**69**	**+99**	**+30%**

Table 17. Sage-grouse lek counts – 2003 vs. 2004 – All of Buffalo - Skedaddle

Lek (I = Index Lek)	2003 Peak	2003 Number Of Counts	2004 Peak (through 5/05/04)	2004 Number Of Counts	Lek Code
East Lassen					
Chalk Bluff (I)	31	7	50	6	LAS0071
Skedaddle (I)	80	8	95	6	WAS0002
Gilman (I)	32	8	58	5	LAS0127 / 0011
East Side (I)	13	5	9	3	LAS0101
Shinn Ranch (I)	72	6	88	4	LAS0001
Spencer (I)	0	4	0	5	LAS0119
Telephone (I)	0	4	0	5	WAS0001
Hall Springs (I)	16	6	37	4	LAS0057
Rush Creek	6	1	39	2	LAS0122
(Rush Creek – New)	-	1	10	2	LAS0135
Subtotal	**250**	**50**	**386**	**42**	
Central Lassen					

Shaffer Mtn. (I)	14	7	22	10	LAS0004
Little Black's Mtn. (I)	41	5	40	6	LAS0007
Horse Lake (I)	0	3	0	2	LAS0106
Grasshopper (I)	8	5	10	7	LAS0105
Spanish Springs (I)	26	8	23	6	LAS0080
Pete's Creek	7	1	6	5	LAS0123
Fleming	4	6	0	6	LAS0079
Mad. Prairie	32	8	42	8	LAS0060
Subtotal	**132**	**43**	**143**	**50**	
Lassen Non-Hunt					
HH – Corral (I)	7	7	5	7	LAS0124
HH –Drift Fence	3	6	1	6	LAS0125
HH "New in Trees"	-	-	6	5	LAS0148
HH – "New Bench"	-	-	2	4	LAS0149
Dill Field (I)	31	6	47	5	LAS0069
Dodge (LAS0110)	1	4	2	4	LAS0110
Dodge (LAS0041)	-	-	12	1	LAS0041
	-	-	12	5	LAS0152
	-	-	3	5	LAS0153
	-	-	2	5	LAS0154
Schmidt Dill	-	-	5	4	LAS0155
Schmidt Dodge	-	-	11	4	LAS0156
Tuledad Rim (I)	20	3	48	4	LAS0034
Tuledad Valley	0	2	8	4	LAS0126
Subtotal	**62**	**28**	**164**	**63**	
TOTAL	**444**	**121**	**693**	**155**	

Table 18. Population-lek summary, Buffalo - Skedaddle PMU as of 5/7/2004

Permit Hunting Management Units	County	Pop. Hunted 1987-2003	Lek Complexes of 1 of More Leks[1]	Total Leks	Inactive Leks**	Active Leks (Peak Males)	Est. Breeding Pop. 2004 ***
East Lassen	Lassen*	Yes CA+NV	17	68	60	8(386)	~975
Central Lassen	Lassen*	Yes CA+NV	18	44	38	6(143)	~350
Non-Hunt	Lassen Modoc	No No	12 1	34 2	19 2	15(164) 0	~400 0
TOTAL			48	148	119	29(693)	~1,725

1. Allocation into complexes is preliminary until mapping is complete.

* Some portions of populations are interstate migrants with Washoe County, Nevada.

** 2004; active leks are >/= 2 males per Connelly et al. (2000).

*** Population estimates based on +/- 2.5 X peak males on lek.

Appendix F: Land Health Standards. Grazing and OHV Guidelines

In Reply Refer To:
4180 (220)

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Washington. D.C. 20240
http://www.blm.gov

MEMORANDUM

To: The Secretary
Through: Sylvia Baca
Assistant Secretary, Land and Minerals Management (June 13, 2000)

From: Director, Bureau of Land Management

Subject: Approval of Northeastern California and Northwestern Nevada Standards and Guidelines for Livestock Grazing

In accordance with 43 CFR 4180.2(b), the Acting California State Director is submitting for Secretarial approval the attached Northeastern California and Northwestern Nevada Standards and Guidelines for Livestock Grazing. BLM review finds that they comply with the requirements of the regulations. Standard and Guidelines development occurred in consultation with the Northeast California and Northwest Nevada Resource Advisory Council and with full public participation. BLM analyzed these standards and guidelines in an Environmental Impact Statement (EIS), which was protested. BLM appropriately considered and addressed the issues stated in the protests, and used them when it developed the Record of Decision (ROD) following
the EIS. The ROD also incorporated the Standards and Guidelines into the appropriate land use plans.

I recommend that you approve the Northeastern California and Northwestern Nevada Standards and Guidelines for Livestock Grazing.

I concur with (concur/not concur) with your recommendation and (approve/not approve) the Northeastern California and Northwestern Nevada Standards and Guidelines for Livestock Grazing.

Approved: Secretary of the Interior Bruce Babbitt
(Signed copy on File in the Eagle Lake field Office)

Date: JUL 13 2000

Attachment

Northeastern California
and
Northwestern Nevada

STANDARDS

for Rangeland Health

and

GUIDELINES

for Livestock Grazing Management

Prepared by the Bureau of Land Management
California State Office

June 1999

TABLE of CONTENTS

1. PREAMBLE 1

2. STANDARDS for RANGELAND HEALTH 1
STANDARD 1: UPLAND SOILS 1
STANDARD 2: STREAMS 2
STANDARD 3: WATER QUALITY 2
STANDARD 4: RIPARIAN and WETLAND SITES 4
STANDARD 5: BIODIVERSITY 5

3. GUIDELINES FOR LIVESTOCK GRAZING MANAGEMENT 6
Guideline 1: Adequate stubble will be present on all stream-side areas at the end of the growing season 6
Guideline 2: Desired seral states will be determined through the allotment management plan 6
Guideline 3: Periods of rest from livestock grazing 6
Guideline 4: Plans for grazing on any allotment must consider other uses 6
Guideline 5: Intensity, frequency, season-of-use, and distribution of grazing shall provide for growth and reproduction of desired plant species 6
Guideline 6: Grazing permits will include site-specific, measurable terms and conditions 6
Guideline 7: Design and work towards implementation of a grazing management strategy . . . 6
Guideline 8: Determination of grazing use by livestock must provide for the habitat requirements of fish and wildlife 7
Guideline 9: Grazing management practices must sustain biological diversity 7
Guideline 10: Take aggressive action to reduce the invasion of undesirable exotic plant species 7
Guideline 11: Prescribed fire and (natural) prescribed fire will be utilized 7
Guideline 12: Grazing and other management practices shall take advantage of transitional opportunities 7
Guideline 13: Development of springs, seeps, and other water related projects shall be designed to promote rangeland health 7
Guideline 14: Apply the management practices recognized and approved by the States of California and Nevada as Best Management Practices 7
Guideline 15: Protect, enhance, and restore beneficial uses of water 7
Guideline 16: Utilization Levels to be Applied to those Allotments Not Meeting or Making Significant Progress Toward Meeting the Standards 7
Utilization of key upland herbaceous species 8
Utilization of key upland browse species 8
Utilization of key riparian species 8
Application of the above utilization levels 9
Implementation of this guideline 9
If reductions in permitted use are required 11
Guideline 17: Rangeland monitoring 11

STANDARDS AND GUIDELINES for RANGELAND HEALTH in NORTHEASTERN CALIFORNIA and NORTHWESTERN NEVADA

1. PREAMBLE

Healthy rangelands contribute to the social and economic well being of rural communities in Northeastern California and Northwestern Nevada, and they provide, over the long-term, the most reliable harvest of rangeland resources. The objective of rangeland resource planning is to integrate BLM resources with other resources to achieve the mandate of multiple-use and sustained yield management of renewable resources in an environmentally sound and cost-effective manner.

The standards of rangeland health are expressions of physical and biological condition or degree of function required for healthy sustainable rangelands. The Standards are applied on a landscape scale. Some standards may not apply to all acres. For example, a mosaic of vegetation types and age classes may produce the diversity associated with healthy rangelands; however, some individual vegetation communities within the mosaic may lack diversity.

The Standards always relate to the capability or potential of a specific site. The land will not be expected to produce vegetation or support habitats not attainable due to climate, soils, or other limiting attributes. The Standards are designed to establish the threshold for healthy rangelands. The Standards contain exceptions for certain necessary or unavoidable circumstances (see, for example, Standard 4); however, the exceptions should be applied under extreme conditions only, and must be fully justified.

The guidelines for grazing management are the types of grazing management methods and practices determined to be appropriate to ensure that standards can be met or that significant progress can be made toward meeting the standard. The Guidelines were designed to provide direction, yet offer flexibility for implementation through activity plans and terms and conditions for grazing permits. The BLM must operate within the constraints of other regulatory requirements that may affect how S&G's are applied for livestock grazing, for example the Wild Free-Roaming Horse and Burro Act (1971).

2. STANDARDS for RANGELAND HEALTH

STANDARD 1: UPLAND SOILS

> *Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, and landform, and exhibit functional biological, chemical, and physical characteristics.*

Meaning that:

Precipitation is able to enter the soil surface and move through the soil profile at a rate appropriate to soil type, climate, and landform; the soil is adequately protected against human-caused wind or water erosion; and the soil fertility is maintained at, or improved to, the appropriate level.

Criteria to Meet Standard:

* Groundcover (vegetation, litter, and other types of groundcover such as rock fragments) is sufficient to protect sites from accelerated erosion.

* Evidence of wind and water erosion, such as rills and gullies, pedestaling, scour or sheet erosion, and deposition of dunes is either absent or, if present, does not exceed what is natural for the site.

* Vegetation is vigorous, diverse in species composition and age class, and reflects the potential natural vegetation or desired plant community (DPC) for the site.

STANDARD 2: STREAMS

Stream channel form and function are characteristic for the soil type, climate, and landform.

Meaning that:

Channel gradient, pool frequency, width to depth ratio, roughness, sinuosity, and sediment transport are able to function naturally and are characteristic of the soil type, climate, and landform.

Criteria to Meet Standard:

* Gravel bars and other coarse textured stream deposits are successfully colonized and stabilized by woody riparian species.

* Stream bank vegetation is vigorous and diverse, mostly perennial, and holds and protects banks during high stream flow events.

* The stream water surface has a high degree of shading, resulting in cooler water in summer and reduced icing in winter.

* Portions of the primary floodplain are frequently flooded (inundated every 1-5 years).

STANDARD 3: WATER QUALITY

Water will have characteristics suitable for existing or potential beneficial uses. Surface and groundwater complies with objectives of the Clean Water Act and other applicable water quality requirements, including meeting the California and Nevada State standards, excepting approved variances.

Management Objective: For water bodies, the primary objective is to maintain the existing quality and beneficial uses of water, protect them where they are threatened, and restore them where they are currently degraded. This objective is of even higher priority in the following situations:

a. where beneficial uses of water bodies have been listed as threatened or impaired pursuant to Section 303(d) of the Federal Clean Water Act;

b. where aquatic habitat is present, has been present, or is potentially present for Federal threatened or endangered, candidate, and other special status species dependent on water resources; and

c. in designated water resource sensitive areas such as riparian and wetland areas.

Meaning That:

BLM will:

Maintain the physical, biological, and chemical integrity of waters flowing across or underlying the lands it administers.

Protect the integrity of these waters where it is currently threatened.

Insofar as is feasible, restore the integrity of these waters where it is currently impaired.

Not contribute to pollution and take action to remedy any pollution resulting from its actions that violates California and Nevada water quality standards, Tribal water quality standards, or other applicable water quality requirements (e.g., requirements adopted by SWRCB or RWQCB in California, or Environmental Protection Agency (EPA) pursuant to Section 303(d) of the Clean Water Act or the Coastal Zone Reauthorization Act). Where action related to grazing management is required, such action will be taken as soon as practicable but not later than the start of the next grazing year (in accordance with 43 CFR 4180.1).

Be consistent with the nondegradation policies as identified by the States.

Develop and execute a Management Agency Agreement with the States of California and Nevada for the efficient protection of water quality associated with the BLM's management.

Work with the States' water quality administrative agencies and the EPA to establish appropriate beneficial uses for public waters, establish appropriate numeric targets for 303(d)-listed water bodies, and implement the applicable requirements to ensure that water quality on public lands meets the objectives for the designated beneficial uses of the water.

Develop and implement Best Management Practices (BMP's) approved by the States to protect and restore the quality and beneficial uses of water, and monitor both implementation and effectiveness of the BMP's. These BMP's will be developed in full consultation, coordination, and cooperation with permittees and other interests.

State or Tribal approved variances or exceptions to water quality standards may be applicable within their Basin Plans for specific types of activities or actions. The BLM will follow State or Tribal administrative procedures associated with variances.

As Indicated By:

* The following do not exceed the applicable requirements for physical, chemical, and biological constituents including but not limited to: temperature, nutrients, fecal coliform, turbidity, sediment, dissolved oxygen, and aquatic organisms and plants (e.g., indicator macroinvertebrates, fish, algae, and plants).

* Achievement of the standards for riparian, wetlands, and water bodies.

* Monitoring results or other data that show water quality is meeting the standard.

STANDARD 4: RIPARIAN and WETLAND SITES

Riparian and Wetland areas are in properly functioning condition and are meeting regional and local management objectives.

Meaning that:

The riparian and wetland vegetation is controlling erosion, stabilizing stream banks, shading water areas to reduce water temperature, filtering sediment, aiding in floodplain development, dissipating energy, delaying floodwater, and increasing recharge of ground water that is characteristic for these sites. Vegetation surrounding seeps and springs is controlling erosion and reflects the potential natural vegetation for the site.

Criteria to Meet Standard:

* Riparian vegetation is vigorous and mostly perennial and diverse in species composition, age class, and life form sufficient to stabilize stream banks and shorelines.

* Riparian vegetation and large woody debris are well anchored and capable of withstanding high stream flow events.

* Negligible accelerated erosion as a result of human related activities is evident.

* Age class and structure of woody riparian and wetland vegetation are appropriate for the site.

Exceptions and Exemptions to Standard 4 (where Standard 4 is not applicable)

* Structural facilities constructed for livestock/wildlife water or other purposes are not natural wetland and/or riparian areas. Examples are: water troughs, stock ponds, flood control structures, tailings ponds, water gaps on fenced or otherwise restricted stream corridors, etc.

STANDARD 5: BIODIVERSITY

Viable, healthy, productive, and diverse populations of native and desired plant and animal species, including special status species, are maintained.

Meaning that:

Native and other desirable plant and animal populations are diverse, vigorous, able to reproduce and support nutrient cycles and energy flows.

Criteria to Meet Standard:

* Wildlife habitats include seral stages, vegetation structure, and patch size to promote diverse and viable wildlife populations.

* A variety of age classes is present for most species.

* Vigor is adequate to maintain desirable levels of plant and animal species to ensure reproduction and recruitment of plants and animals when favorable events occur.

* Distribution of plant species and their habitats allow for reproduction and recovery from localized catastrophic events.

* Natural disturbances such as fire are evident but not catastrophic.

* Nonnative plant and animal species are present at acceptable levels.

* Habitat areas are sufficient to support diverse, viable, and desired populations and are connected adequately with other similar habitat areas.

* Adequate organic matter (litter and standing dead plant material) is present for site protection and decomposition to replenish soil nutrients and maintain soil health.

3. GUIDELINES FOR LIVESTOCK GRAZING MANAGEMENT

The following guidelines are meant to apply to one or more of the standards for rangeland health.

Guideline 1: Adequate stubble will be present on all stream-side areas at the end of the growing season, or at the end of the grazing season if grazing occurs after fall dormancy. The residual or regrowth should provide sufficient herbaceous forage biomass to meet the requirement of plant vigor maintenance, bank protection, and sediment entrapment. Stubble height thresholds will be set on a site-specific basis, except for those allotments to which Guideline 16 applies (see Guideline 16 for an explanation of when Guideline 16 applies).

Utilization of stream-side herbaceous and woody plants should be limited to a specified amount of the current growth, and/or livestock should be removed to allow sufficient time for plant regrowth.

a. Late season use (summer or fall grazed pastures) requires more restrictive utilization based on site specific situations.

b. Special situations such as fragile fisheries habitats or easily eroded stream banks may require more restrictive utilization thresholds.

c. Hoof action impacts or chiseling on stream banks will not exceed specified thresholds so that stream bank stability is maintained or improved.

Guideline 2: Desired seral states will be determined through the allotment management plan (AMP) development process; generally the goal will be to achieve advanced ecological status in the riparian zone, except where site-specific objectives call for lower ecological status (such as meadows in important sage-grouse habitat, where the objective might call for a pattern of meadows in different seral stages from mid seral to the potential natural community). These site-specific objectives will be determined through AMP's or other plans and analyzed through the NEPA process.

Guideline 3: Periods of rest from livestock grazing or other avoidable disturbances must be provided during/after periods of stress on the land (e.g., fire, flood, drought) and during critical times of plant growth.

Guideline 4: Plans for grazing on any allotment must consider other uses (recreation, archaeological sites, wildlife, horses and burros, mineral resource extraction, etc.) and be coordinated with the other users of public lands so that overall use does not detract from the goal of achieving rangeland health.

Guideline 5: Intensity, frequency, season-of-use, and distribution of grazing shall provide for growth and reproduction of desired plant species and the achievement of the potential natural vegetation or DPC.

Guideline 6: Grazing permits will include site-specific, measurable terms and conditions.

Guideline 7: Design and work towards implementation of a grazing management strategy for livestock for each grazing unit (pasture) within I (Improvement) and M (Maintenance) category allotments, to maintain or improve rangeland health. This may consist of, but not be limited to, season-of-use, rotation, or by setting utilization levels for desirable plants. Each management plan implemented will incorporate the factors necessary to maintain the health of desirable plants.

Guideline 8: Determination of grazing use by livestock must provide for the habitat requirements of fish and wildlife.

Guideline 9: Grazing management practices must sustain biological diversity across the landscape. A mosaic of seral stages, vegetation corridors, and minimal habitat fragmentation must be maintained.

Guideline 10: Take aggressive action to reduce the invasion of undesirable exotic plant species into native plant communities. The spread of noxious weeds will be controlled through appropriate methods such as grazing management, fire management, and other management practices.

Guideline 11: Prescribed fire and (natural) prescribed fire will be utilized to promote a mosaic of healthy plant communities and vegetative diversity.

Guideline 12: Grazing and other management practices shall take advantage of transitional opportunities (e.g., drought, flood, fire) to enhance or establish populations of desirable tree, shrub, herbaceous, and grass species. Utilization levels will be established for desired seedlings, saplings, and/or mature plants to promote their presence in the plant community.

Guideline 13: Development of springs, seeps, and other water related projects shall be designed to promote rangeland health. Wherever possible, water sources shall be available year long for use by wildlife.

Guideline 14: Apply the management practices recognized and approved by the States of California and Nevada as Best Management Practices (BMP's) for grazing related activities to protect and maintain water quality.

Guideline 15: In watersheds draining into water bodies that have been listed or are proposed for listing as having threatened or impaired beneficial uses, and where grazing activities may contribute to the pollutants causing such impairment, the management objective is to fully protect, enhance, and restore the beneficial uses of the water.

Guideline 16: Utilization Levels to be Applied to those Allotments Not Meeting or Making Significant Progress Toward Meeting the Standards

If monitoring or documented observation indicates that one of more of the standards is not being met, and if significant progress is not being made toward meeting all of those standards that are not being met, and if there is evidence that current grazing practices are causing or contributing to this unsatisfactory condition, then the following utilization levels will be applied.

Utilization of key upland herbaceous species

UTILIZATION GUIDELINES (adapted from Holechek 1988 and Holechek et al. 1998)	
Community Type	**Percent of Use of Key Herbaceous Species**
Salt desert shrubland	25-35
Semi-desert grass and shrubland	30-40
Sagebrush grassland	30-40
California annual grassland	50-60*
Perennial grass communities within the California annual grassland vegetation type	30-40
Coniferous forest	30-40
Mountain shrubland	30-40
Oak woodland	30-40

Pinyon-juniper woodland	30-40
Alpine tundra	20-30

* Residual dry matter (RDM) guidelines will be used instead of these utilization levels for management of annual species in the California annual grassland. These RDM levels correspond approximately with these utilization levels. The RDM levels given in the table in the Final EIS under Alternative 5, Ukiah RAC Recommended Standards and Guidelines (Section 2.92), will be used for those few annual allotments within the area covered by the Northeastern California and Northwestern Nevada Standards and Guidelines.

Utilization of key upland browse species

There will be no more than 20 percent utilization of annual growth on key browse species prior to October 1 within identified deer concentration areas. These concentration areas are those areas within mule deer habitat where mule deer numbers are most likely to be concentrated during the winter season (winter season normally occurs from December 16 through March 31). These areas have been identified through State Fish and Game Agency fall and spring counts over a period of several years. Maps of these deer concentration areas are on file at the BLM Eagle Lake Field Office.

Utilization of key riparian species

A 4-6 inch minimum stubble height will remain at the end of the growing season in most riparian areas.

There should be no more than 20 percent utilization on key riparian trees and shrub species in those areas where the presence of woody riparian species is necessary to meet standards.

Application of the above utilization levels

These utilization guidelines will be applied to those areas of the allotment responsible for the determination that the allotment is not meeting the standards. For example, an allotment has 10 riparian areas, of which six have been determined to be in proper functioning condition and four have been determined to be functional–at risk. The utilization guidelines for riparian species given above would be applied to the four riparian areas that are functional–at risk, not to the six that are in proper functioning condition (although *all* of the riparian areas will be managed to meet the standards). Also, only those guidelines that are applicable to making progress toward meeting the standards that are not being met would be applied. For example, if only riparian standards are not being met, then only the guidelines applicable to utilization and stubble height of riparian vegetation would be applied.

These utilization levels will be implemented unless and until a current site-specific analysis is completed and new utilization levels are developed for specific allotments and documented in AMP's, other management plans, and/or in terms and conditions of grazing permits/leases. New site-specific utilization levels that are developed may be more restrictive than the guidelines presented above, consistent with achieving the desired resource conditions (as prescribed in land use plans and activity plans) and progress toward meeting the standards.

Implementation of this guideline

1. Uplands (including perennial grass and browse communities).

Guideline 16 will be implemented only on those upland areas that are responsible for the determination that the allotment is not meeting one or more of the standards and for which lighter utilization would be expected to move these areas toward meeting the standard(s).

Management changes (such as changes in season of use, timing, duration, and/or intensity; rotational grazing; fencing; herding; and/or adjustments in stocking rates) will be implemented if utilization guidelines on the average of the upland key areas across the pasture (or allotment if there is only one pasture) are exceeded for 2 consecutive years or in any 2 years out of every 5 years. In addition, at least 70 percent of upland key areas on the pasture (or allotment) are not to exceed maximum utilization guidelines in most years. Because of the potential long-term damage to perennial grass species associated with severe grazing, severe grazing use (>70 percent utilization) in any upland key area in any year will result in a management change the following year. If any particular key area fails to meet the guidelines for more than 2 consecutive years, then management action will be taken to remedy the problem in the area of the allotment that key area represents. The average (mean) utilization on key species will be estimated at each key area and used to determine if the guidelines have been met. There are indications that the median may be a better statistic to use than the mean; we will calculate both statistics from the same data sets and make a determination on which statistic to use after examining the data over a period of a few years. See Appendix 20 of the Final EIS for further discussion on this issue.

The management options to be implemented to meet this guideline will be determined in full consultation, cooperation, and coordination with affected permittees and other interests.

For allotments not meeting or making significant progress toward meeting the standards (and for which lower utilization levels of perennial upland species would be expected to help move these allotments toward the standards), utilization data already in hand will be used to determine whether a management change is necessary. Thus, for example, if utilization on a particular key area has exceeded the thresholds for the 2 years previous to the approval of these standards and guidelines, a management change will be implemented prior to the first grazing year following this approval. In addition to implementing management changes that are expected to bring utilization levels within threshold values, close monitoring will follow to ensure that the grazing use levels are not exceeded during the grazing period following the management changes. If utilization levels are exceeded or expected to be exceeded during this period, a reduction or curtailment of further grazing in the area represented by the key area will be required for the remainder of the grazing season. In addition, further management changes will be implemented prior to the start of the next grazing season to bring utilization levels within thresholds

.

2. Riparian areas (including herbaceous and woody plant communities).

Guideline 16 will be implemented only on those riparian areas that are nonfunctional or functional--at risk and lighter utilization levels would be expected to move these areas toward meeting the standards. The guideline will apply where the riparian area in a healthy state has the capability to produce vegetation of the prescribed height. The stubble heights will be measured at the end of the growing season to determine if the guideline has been met. Management changes (such as changes in season of use, timing, duration, and/or intensity; rotational grazing; fencing; herding; and/or adjustments in stocking rates) will be implemented if stubble heights on the average of the key riparian areas across the pasture (or allotment if there is only one pasture) fall below the guidelines for 2 consecutive years or in any 2 years out of every 5 years. In addition, at least 70 percent of riparian key areas on the allotment are to exceed minimum stubble heights in most years. If any particular key area fails to meet the guidelines for more than 2 consecutive years, then management action will be taken to remedy the problem in the area of the allotment that key area represents.

Because stream banks may be inadequately protected by heavy use in any one year and because stubble heights below 3 inches result in cattle shifting their preference to shrubs, stubble heights below 2 inches in any one year will require a management change in the following year.

The mean stubble height on key riparian species will be estimated at each riparian key area and used to determine if the guidelines have been met. There are indications that the median may be a better statistic to use than the mean; we will calculate both statistics from the same data sets and make a determination on which statistic to use after examining the data over a period of a few years. See Appendix 20 of the Final EIS for further discussion on this issue.

For allotments not meeting or making significant progress toward meeting the standards (and for which higher stubble would be expected to help move these allotments toward the standards), stubble height data already in hand will be used to determine whether a management change is necessary. Thus, for example, if stubble heights on a particular key area have fallen below the thresholds for the 2 years previous to the approval of these standards and guidelines, a management change will be implemented prior to the first grazing year following this approval. In addition to implementing management changes that are expected to bring stubble heights within threshold values, close monitoring will follow to ensure that the grazing use levels are not exceeded during the grazing period following the management changes. If utilization levels are exceeded or expected to be exceeded during this period, a reduction or curtailment of further grazing in the area represented by the key area will be required for the remainder of the grazing season. In addition, further management changes will be implemented prior to the start of the next grazing season to bring utilization levels within thresholds.

The management options to be implemented to meet this guideline will be determined in full consultation, coordination, and cooperation with affected permittees and other interests.

If reductions in permitted use are required

Any reductions in permitted use required as a result of implementing this guideline will be held in suspension and apportioned back to the permittee(s) or lessee(s) authorized to graze in the affected allotment if rangeland health improves to the extent that the authorized officer determines additional forage to be available.

Guideline 17: Rangeland monitoring to determine utilization of forage resources and trend of rangeland health will be conducted in each allotment based on current accepted practices and techniques as directed in the Interagency Technical References: *Utilization Studies and Residual Measurements* (BLM et al. 1996b) and *Sampling Vegetation Attributes* (BLM et al. 1996a). Monitoring methodologies will be applicable to local conditions and developed in consultation with permittees and interested publics.

To the extent possible, monitoring methods will be simple and easily accomplished. BLM, permittees, or others will do the monitoring. BLM will be responsible for ensuring that the monitoring is conducted in accordance with currently accepted practices and techniques, for analyzing and interpreting the data collected (in consultation, coordination, and cooperation with affected permittees and other interests), and for the accuracy of the data.

Existing key areas will be used where they exist. New key areas will be selected in full consultation, coordination, and cooperation with affected permittees and other interests. BLM will periodically review established key areas to determine if they continue to be appropriate to management. This review will be done in full consultation, coordination, and cooperation with affected permittees and other interests. If there is disagreement between BLM, permittees, and other interests over the

location of key areas, the RAC will be asked for ideas on resolution. The final decision on the placement of key areas, however, rests with BLM.

BLM, in cooperation with other agencies, including Cooperative Extension, the Natural Resources Conservation Service, and the Forest Service, will provide training for permittees and other interested parties on rangeland monitoring methods.

IMPLEMENTATION

The fallback standards (43 CFR 4180.2(f)(1)) have been in effect in since August 12, 1997. An initial screening of allotments was made, based on existing information, to determine the status of each allotment with respect to meeting the fallback standards. Each allotment was placed into one of four categories as follows:

Category 1: Areas where one or more standards are not being met, or significant progress is not being made toward meeting the standards(s), and livestock grazing is a significant contributor to the problem.

Category 2: Areas where all standards are being met, or significant progress is being made toward meeting the standard(s).

Category 3: Areas where the status for one or more standards is not known, or the cause of the failure to not meet the standard(s) is not known.

Category 4: Allotments where one or more of the standards are not being met or significant progress is not being made toward meeting the standards due to causes other than (or in addition to) livestock grazing activities. (Those allotments where current livestock grazing is also a cause for not meeting the standards are included in Category 1 in addition to this category.) The authorized officer should take appropriate action based on regulation or policy; however, these actions not related to livestock grazing are outside the scope of this implementation plan and will not be addressed in this document.

An assumption has been made by the BLM field managers that, with few possible exceptions, the implementation needed for the regulatory fallback standards and guidelines will essentially be the same as for any anticipated set of final approved standards and guidelines implemented pursuant to this Record of Decision (ROD). Consequently, the categorization of allotments under the standards in this ROD is likely to be the same as the categorization under the fallback standards and guidelines. Existing allotment assessments and their resulting determinations as to category will be reviewed to ensure that the determination is correct under the standards set in place by this ROD.

New allotment assessments, reviews of existing allotment assessments, and determination of allotment category will be conducted in full consultation, coordination, and cooperation with permittees and other interests.

We intend to conduct rangeland health assessments on all allotments within the next 5 years. First priority for these assessments will be given to those allotments where we already know or suspect one or more of the standards is not being met. These include those allotments placed in

Category 1 under the fallback standards and those allotments currently in Category 3 that we have reason to believe may not be meeting standards. After these allotments have been assessed, the remaining allotments will be assessed using the BLM I, M, and C priority management system, with first priority to I, second to M, and last to C.

For those allotments where the standards are not being met (Category 1), management actions will be implemented to correct the situation prior to the next grazing season turn-out period for the allotment. The management options will be determined in full coordination, consultation, and cooperation with permittees and other interests.

Monitoring will be conducted to evaluate the progress towards improving rangeland health and to evaluate the success of the specific management measures applied (see Guideline 17).

APPLICATION OF GUIDELINES

Once the guidelines are approved by the Secretary of the Interior, they will be applicable to the management of livestock grazing on all allotments not meeting the health standards. Some guidelines will be applicable regardless of the specific rangeland health condition, as they are designed to help protect and sustain rangeland health and are not intended to be applied only to remedy problems. Many of the guidelines will need to be more specifically identified and then applied as terms and conditions of a permit or lease, based upon the specific needs for meeting rangeland health standards. There will be instances where specific terms and conditions will be applied to grazing use authorizations for reasons other than those directly related to rangeland health, such as to accommodate other resource needs and land uses or to meet administrative requirements. Examples of this may include protecting cultural resource sites, requiring a specific breed of livestock to be used that is compatible with the needs of other permittees or lessees using the same allotment, or for meeting various regulatory requirements for grazing administration purposes. In some instances, existing terms and conditions will be carried over from previously made plans and commitments, such as those identified in allotment management plans or coordinated management plans. In these instances, the terms and conditions may or may not be related to rangeland health needs.

Any terms or conditions specified for a permit or lease must be consistent with and support appropriate BLM land use plans or other land use plans applicable to the public lands. BLM will also adhere to requirements such as those identified as terms or conditions from a biological opinion for protecting the habitat of a plant or animal under the Endangered Species Act.

Terms and conditions will be applied to grazing permits, leases, or other grazing authorizations as the authorized officer (Field Manager) determines the need. The determination of what terms and conditions will be applied will be made in full consultation, coordination, and cooperation with the respective permittees/lessees and other interested parties involved in the particular allotment. The same process will be used for making needed changes to any existing terms and conditions. Information from assessments and evaluations of monitoring data will be used to determine the management changes needed. Management options that would be expected to move allotments toward meeting the standards will be determined in full coordination, consultation, and cooperation with permittees/lessees and other interested parties.

Alternative management changes will be considered and evaluated through the NEPA process prior to making final determinations. It is anticipated that in most instances, the terms and conditions will be identified cooperatively and be agreed upon by the affected permittee/lessee

and all interested parties. Where an agreement cannot be reached, then a formal decision (which is appealable) will be issued.

If reductions in permitted use are necessary to achieve the standards or meet the guidelines, the animal unit months (AUMs) by which the permitted use is reduced will be held in suspension. Once the authorized officer determines that rangeland health has recovered to an extent that all or part of the suspended permitted use can be restored, this suspended permitted use shall first be apportioned in satisfaction of suspended permitted use to the permittee(s) or lessee(s) authorized to graze in the allotment in which the forage is available (this is in accordance with 43 CFR 4110.3-1(b)).

REPORTING PROGRESS IN RANGELAND HEALTH ACHIEVEMENTS

Rangeland health conditions will be reported annually for each grazing allotment. This information will include the determinations of rangeland health conditions through assessments and monitoring and the progress made towards meeting rangeland health standards. At a minimum the report will identify, by allotment: (1) what standards, if any, are not being met; (2) whether significant progress is being made toward meeting those standards that are not currently being met; (3) the magnitude of those standards not being met, in terms such as acres, miles of stream, number of sites, etc.; (4) the progress that has been made in determining and implementing needed management changes; and (5) the results of making the management changes as determined from monitoring and assessment information. Additionally, any changes in the management categories of the allotments will be identified, accompanied by an explanation of the reasons for the change.

The above information will be gathered at the field office which administers the respective allotment(s). A summary of this information will be consolidated for all of the allotments within the EIS area and made available to the public annually.

Tables were provided in the Final EIS that showed all allotments in the State and the category to which they were assigned in 1997. Since that list was compiled, management changes have been implemented and additional assessment and monitoring work has been completed that makes those lists obsolete. When the annual report is compiled each year, an updated list of all allotments, by category, will be provided as part of the report.

Throughout all processes the public is encouraged to participate in the identification of rangeland health conditions, developing management remedies, monitoring results, and reviewing progress towards achieving rangeland health standards.

Bureau of Land Management

Northeast California Resource Advisory Council
Recommended Off-Highway-Vehicle Management Guidelines

Adopted and Forwarded to the Bureau of Land Management
At a Regularly Scheduled Business Meeting
August 29, 2000
Susanville, California

The guidelines for Off-Highway-Vehicles management are the methods and practices determined to be appropriate to ensue that BLM Land Health Standards can be met, or that significant progress can be made toward meeting the standards. The guidelines were designated to provide direction, yet offer flexibility, for implementation through OHV designations, activity plans and permit terms and conditions.

Guideline 1: OHV use will not be allowed on streams, riparian/wetland areas. Where needed, crossings will be bridged or hardened.

Guideline 2: OHV use will not degrade ecological status.

Guideline 3: OHV use requires review/action during/after periods of high use and/or stress (fire, flood, drought). OHV closure may be appropriate in response to factors such as accelerated erosion or loss of natural barriers to off-road use.

Guideline 4: Plans for OHV use must consider other resources and uses (livestock grazing, recreation, archaeological sites, wildlife, horses and burros, mineral extraction, etc.) and be coordinated with the other users of public lands. Management of OHV use should be sensitive to the creation and management of areas for quiet activities.

Guideline 5: OHV use will be managed to provide for the maintenance and reproduction of desired plant species and the achievement of the potential natural vegetation or desired plant communities.

Guideline 6: OHV special events will require permits that will include site specific, measurable terms and conditions.

Guideline 7: OHV projects that are subject to California OHV grant funding shall comply with the program's requirements as well as Land Health Standards. Tread Lightly concepts and non-proliferation principles will be included in permits.

Guideline 8: OHV use must consider habitat requirements for fish and wildlife.

Guideline 9: OHV management practices must consider soil erodiblity. Route designation and OHV management will be based on erosion hazards.

Guideline 10: The spread of noxious weeds by OHV use will be combated through public education efforts and vehicle cleaning requirements, or other measures, where appropriate.

Guideline 11: Locate routes, trails and developments away from sensitive areas.

Guideline 12: OHV related activities will be managed to protect and maintain watershed and water quality.

Guideline 13: Use various communication and interpretive measures and user groups to inform public land visitors about an ethic of public land use.

Guideline 14: OHV utilization and impacts will be monitored using currently accepted practices and techniques.

Guideline 15: “Open” OHV use areas must be specifically designated.

Appendix G: Habitat Restoration Monitoring Data

Monitoring Methodology:

Monitoring of habitat restoration requires two basic steps, density and cover. Measuring the density of selected species is performed on rehabilitation project areas beginning no later than two years after completing the rehabilitation project. Density monitoring continues until the vegetation has reached sufficient size and distribution to provide cover as it relates to sage-grouse requirements.

Field Methods:

A grid of 100 meter by 100 meter cells (macroplots) will be placed over the mapped rehabilitation projects. Ten percent of the total macroplots that occur within the project are will be randomly chosen for sampling. A systematic sampling methology will be applied within each macroplot to be sampled using ten transects. The first transect in each macroplot will be randomly placed within the macroplot by choosing a number between 0 and 9. The random location is chosen separately for each macroplot. Nine additional transects will be systematically placed within the macroplot. Ten 1 meter X 2 meter plots (quadrants) will be placed systematically along each transect after the starting point is randomly chosen by selecting a number between 0 and 9. The total sample will include 100 quadrants within each macroplot.

Normally rehabilitation projects are confined to a single soil series. If the project includes more than one soil series the sampling will be stratified with an equal number of samples taken in each soil series.

Density data will be gathered for all species of interest, primarily sagebrush and grasses, and some forbs within brood rearing habitat. The number of individuals for each species will be recorded as mature or seedling in order to separate seeding response from pre-treatment perennial vegetation. Cover will be gathered, when the vegetation has recovered sufficiently for cover to be effective for sage-grouse, using step point transects.

Data Storage and Reporting

All data gathered will be archived by the BLM Wildlife Management Biologist or Ecologist with a summary provided in this Appendix annually.

Appendix H: Regulatory Authority and Enforcement Guidelines Including Introductions Transplants & Reestablishment/Augmentation

Sage-grouse are a California Species of Special Concern and harvest species in California. The California Department of Fish and Game administers sage-grouse populations including take, setting permit recommendations, investigation and citing poachers, and other laws and regulations concerning sage-grouse through the California Code of Regulations (CCR) Title 14.

Sage-grouse are also a harvest species in Nevada. Nevada Department of Wildlife establishes seasons, method of take, bag limit, and arrests or cites poachers under the authority of Nevada Revised Statute (NRS) 501.181.

The majority of sage-grouse habitat within the Buffalo - Skedaddle PMU is managed by the Bureau of Land Management. BLM has the responsibility to manage for multiple uses, where appropriate, including wildlife use and development as stated in the Federal Land Policy and Management Act (FLPMA) (43 U.S.C. 1701 *et seq.*). The Secretary of the Interior through the BLM has custody of the land itself and the habitat upon which resident wildlife depend. Management of the habitat is the responsibility of the Federal Government. Congress, however, in the Sikes Act has directed the Secretary of the Interior to cooperate with the States in developing programs on certain public lands administered by the BLM for the conservation and rehabilitation of wildlife, including specific habitat projects (43 CFR, Part 24).

Memorandum of Understandings, Regulations, and Policy Effecting Translocations Onto or From BLM Administered Lands

Master Memorandum of Understanding between The CALIFORNIA DEPARTMENT OF FISH AND GAME and The BUREAU OF LAND MANAGEMENT DEPARTMENT OF THE INTERIOR. BLM Manual Supplement 6521.11, State Director – California, Release Number 6 – 18, 5/10/84.

B. THE DEPARTMENT AGREES:

2. *To annually submit by July 1, to the Bureau, a list of wildlife transplants and reintroductions proposed for public lands for the period beginning 12 months after submission. Such transplants or reintroductions must be approved by the Bureau's State Director and the Department's Director prior to implementation. Emergency situations may necessitate relocations to public lands. These will require the same approval authority as described above.*

C. THE DEPARTMENT AND THE BUREAU MUTUALLY AGREE:

10. *It is expressly stipulated and agreed by both parties that each and every provision in this Memorandum of Understanding is subject to the laws of the State of California, the laws of the United States, and to the delegated authority assigned in each instance.* NOTE: This means NEPA is a requirement for transplants and reintroductions. As will be cited later NEPA is also required for augmentations.

BLM Manual 1745 – Introduction, Transplant, Augmentation, and Reestablishment of Fish, Wildlife, and Plants. Release 1-1603, 3/26/92.

NOTES: 1.This entire Manual provides policy and direction for the title activities. The following three segments provide clear policy for how sage-grouse translocations should be approached.

2. Development of the activity plan also requires monitoring or inventory data sufficient to support the proposed action.

.06 B. *The restoration and maintenance of native, naturalized, and exotic species and their habitats shall be conducted in accordance with approved land use plans. All proposed introductions, transplants, reestablishments, or augmentation / restocking shall be in conformance with management direction and decisions in an applicable Resource Management Plan (RMP) (see BLM Manual Sections 1601 and 1622).* NOTE: These sections have been replaced by Appendix C, Section E. Fish and Wildlife of BLM Manual Handbook H-1601-1, Release 1-1693, 03/11/05. *A site-specific activity plan must be prepared, using and interdisciplinary planning process, for all proposed introductions, transplants, and reestablishments, unless waived by the State Director.*

C. *Appropriate State and/or Federal agency (ies) must coordinate with and when applicable approve or sponsor introductions, transplants, augmentations/restocking, or reestablishment of species. State level Memorandum of Understanding (MOU's) or Cooperative Agreements with cooperating agencies provide the basis for identifying roles and responsibilities for releases. Field level agreements or operational plans outline the specifics for each release effort.*

D. *The NEPA compliance is required before introductions, transplants and reestablishments can be approved.* NOTE: Based on discussions with the authors of this Manual the presumption is the augmentations will be covered by the initial reintroduction NEPA document.

Appendix I: Sage-Grouse Lek and Other Habitat Informational Signs for Public Lands and Private Lands

Public Viewing Lek Flyer

WHERE CAN I SEE SAGE-GROUSE STRUT?

The best place to see sage-grouse strut in northeastern California is at the Shaffer Mountain strutting ground, about 20 miles northeast of Susanville.

WHEN? Sage-grouse attend leks usually from March though early May. Most activity starts at first light each morning and is over by about 2 hours after sunrise. Some grouse may strut in the evening and even under a full moon but it's mostly an early morning show. For best viewing, arrive 30-45 minutes BEFORE sunrise.

HOW DO I GET THERE? Go north on highway 395 from Susanville, past Standish (fuel, etc.) and Litchfield, past BLM wild horse corrals, past top of hill just north of Honey Lake Valley, and past Smoke Creek Road on your right. Go 1 more mile and turn LEFT (west) on dirt road, go about 6/10 mile and turn left uphill on straight road just past a broad, deep washout. Go uphill about 8/10 mile. The site is on your right (north) in low grassy opening in sagebrush with old rock piles. NON-PAVED ROADS MAY BE IMPASSIBLE IN WET WEATHER. Please don't rip the road!

HOW? A dirt/gravel road is just south of the lek. Grouse usually strut within 100 to 150 yards of this road and you can align your vehicle and watch them from the front seat. Besides, you can rest binoculars (7X or>) or a spotting scope (20X or>) on a part-way down window. Grouse are more comfortable when you are in your vehicle than if you are on foot. Please arrive no later than 30-45 minutes BEFORE sunrise.

WHAT'S GOING ON HERE? Sage-grouse strutting grounds are called "leks". This is a word that means "A <u>place</u> where members of a population come to display and breed" Sage-grouse (and species of prairie grouse, but not forest grouse) come to leks each spring to display and breed. <u>These sites are critical for reproduction.</u> They are usually low, open places in sagebrush flats, valleys or benches, and may persist for a hundred or more years. Leks are closely linked to adequate nesting habitat which is located mostly within 3 to 6 miles of each lek. Sage-grouse will fly or walk from the lek to roosting areas about 2 hours after sunrise unless they are disturbed.

TIPS & PROTOCOL

*** Please do not walk out to where grouse are strutting; they will leave.**
If they leave, they won't strut elsewhere.
NO strutting = NO breeding = NO eggs = NO MORE GROUSE-Period.
***Keep noise and talking low and be mindful of other people's viewing opportunities.**
Site is private land; please DON'T LITTER or burn anything. Please let us know what day you were there and how many (males) you saw. For more information, we can be reached at 530-254-6678, email at sgproject@dfg.ca.gov or mail at Sage-grouse Project, 728-600 Fish & Game Rd., Wendel, California 96136. Other informative links are www.nwf.org , www.ca.dfg.gov, and www.ndow.org. For BLM road conditions 530-257-0456.
Revised 3-1-04 (FAH)

Appendix J: Survey Protocols and Archival and Annual Data Sheets

Populations:

Monitoring sage grouse populations in the Buffalo – Skedaddle PMU is the responsibility of the California Department of Fish & Game (CDFG) in California, and the Nevada Department of Wildlife (NDOW) in Nevada. While there are many similarities in the need and types of data collected by the two states, important differences are discussed below. Because a majority of the sage grouse population in this PMU migrates seasonally between the two states, it is important that methodology and results of monitoring be shared. In addition, it will be important to align monitoring methodology between the two states to a greater degree in future.

California Portion

Basic Monitoring Data:

1. Lek Counts. All known active leks will be counted for peak male attendance each year. Each lek shall be counted by ground count about 7 to 10 days apart at least 3 to 4 times during mid March through early May. Persons doing lek counts have included various state and federal agency biologists and non-agency volunteers. Count protocol, maps, data forms and over-all coordination are provided by CDFG staff biologists. Data are archived at the CDFG Lassen Unit office (original completed forms and Excel databases) and at the CDFG Wildlife Programs Branch in Sacramento (Excel and Access databases). Summary memoranda of count data are produced and distributed each year.

2. Lek Searches (for historic leks and "new" leks). These should be completed every 3 to 5 years by ground or aircraft searches. Since there are about 165 historically and currently active lek sites known from the California portion of this PMU, search efforts should be staggered over several years to improve coverage. Historically active leks occasionally become active again after several years of inactivity provided no significant habitat changes have taken place. "New" leks are occasionally formed when populations increase or they may be discovered after having not been detected from previous searches. Any lek found to be active shall be subsequently counted each year as described in 1, above. Data and search maps are archived at the CDFG Lassen Unit office. Summary memoranda of search data are produced and distributed each year.

3. Harvest Level. Determine safe hunting harvest level (</= 10% of estimated fall population as per WAFWA Guidelines, Connelly et al, 2000) from population estimates based on expansions of lek counts from the previous spring. Lek

count data from 13 leks within the hunted portion of the PMU have been used as “Index” leks from which changes in the population have been estimated. These leks were originally selected as the largest leks with the most years of count data but were not selected randomly. These leks may or may not accurately reflect changes in the sage grouse population within the entire PMU. However, the assumption has been made that the sage grouse population cannot increase or decrease without changes in the numbers of males counted on leks.

The relationship between the numbers of males counted on leks and the portion of the population not counted on leks is about 2.5 additional sage grouse per each male counted (C. Braun, pers. Com., Walsh, 2002, Tirhi, 1994). The non-counted portion of the breeding population includes all age classes of females and those males not attending or not counted at leks. The long term (since 1987) relationship between population estimates calculated from lek counts (all active leks in the hunted portion of the PMU; breeding population) and the following fall population has averaged about 1 young per adult in this PMU. This has generally been found to be a somewhat conservative estimate of young recruited into the hunted population when compared with harvest composition determined each fall from wing data obtained below. Summary memoranda of lek count data and recommended hunting permit numbers are produced and distributed each year by CDFG.

4. Harvest Estimate. The actual harvest for each season is estimated from returned hunter permits and questionnaires from one check station and mail-ins. Each hunter receives a permit, wing envelopes, and a questionnaire along with a pre-paid return envelope for returning wings and questionnaires. Return information and wings are also collected at a check station, in part, to lessen the costs of the mail-in system. Wing and questionnaire return is not mandatory but has averaged at least 60% to 80% of all permitted hunters since 1987. The “Did Not Hunt” percentage of returned permits is applied to those not returned. Estimated total harvest is calculated by assuming that hunter success does not differ between responding and non-responding hunters. Similarly, the percentage of “Did Not Hunt” from returned permits is applied to those permits not returned. The estimate of total harvest is calculated by applying the average hunter harvest from returned questionnaires to non-returned questionnaires and adding the harvest of the two groups together. Summary memoranda of harvest estimates are produced and distributed by CDFG each year.

5. Estimate age, sex and successfully nesting female composition from hunter returned wings each year. Similar to returned questionnaires, wings collected and analyzed each year have averaged about 60% to 80% of the total estimated harvest. This data provides a check on the proportion of young recruited into the hunted population from the proportion of young in wings returned from hunter shot birds. In addition, the proportion of each sex in the total reported harvest can also be estimated and monitored each year from

collected wings. Wings from females can also be used (primary feather replacement patterns) to determine age groups (chick, yearling and adults of age 2 and greater) as well as what proportion of yearling and adult females had broods. These data provide an on-going profile of the basic productivity of the population and are an essential part of annual monitoring. As a further monitoring component, tracking productivity should continue to agree with subsequent changes in lek counts. The assumption has been that a change in the population cannot take place and not eventually result in changes in the number of males counted on leks. These two measures (recruited young and lek counts of males) have provided independent agreement in population trend in this PMU since 1987.

Nevada Portion

See Shawn's input

Habitat:

Inventory, monitoring, and management of habitat on public lands is the responsibility of the Bureau of Land Management.

1. Estimate the Extent of Potentially Successful Nesting Habitat Within Three Miles of the Center of Each Lek Complex. It is assumed from Popham and Gutiérrez (2003) that not all sagebrush will provide the habitat criteria needed for successful nesting. An inventory and subsequent monitoring will identify what percentage of each lek complex's nesting habitat has the structure and complexity necessary for successful nesting. Methods used to collect this information are described in Appendix B. Baseline data (inventory) will be collected over the period of 2005 and 2006. Monitoring will occur for three years following the baseline inventory to establish any within habitat trend. It is assumed that unless some major habitat altering event occurs such as fire, defoliating insect infestations, or excessive human activity, changes within the habitat will happen slowly, therefore, monitoring should be undertaken every five years after the inventory and three years of initial monitoring. All field data sheets and electronically stored data will be archived by the appropriate field office wildlife management biologist.

2. Monitoring of Grazing Impacts to Residual Grass Height Within the Dripline of Nesting Suitable Sagebrush. Residual grass height is one nesting habitat element that is affected by grazing. Grazing in this context includes domestic livestock, wild horses and burros, and wildlife. Actual field methods are described in Appendix B. Residual grass height will be measured only within the dripline of sagebrush that meet the overall height requirement for successful sage-grouse nesting as described by Popham and Gutiérrez (2003). Residual grass height will be measured following the grazing season and, if

weather permits, prior to the strutting season. Nesting habitat within rested pastures will be monitored at the end of the season of rest to provide for a comparison of domestic livestock versus wild horse and burro use. All data sheets and electronically stored data will be archived by the appropriate field office wildlife management biologist.

3. Evaluation and Monitoring of Brood Rearing and Winter Habitats.
Habitat evaluation is necessary to provide baseline information addressing physical characteristics of areas sage-grouse are using in relation to what has been described in the literature. From these data wildlife biologists can determine if habitats in use are appropriate or optimal, or isolated locations of the best available in an area of degraded habitats. All field data sheets and electronically stored data is maintained by the appropriate field office wildlife management biologist.

a. Upland:

Land health assessments completed by each field office's natural resources Interdisciplinary (ID) Team (Pellant et al. 2000) can provide needed habitat information when supplemented with specific information important for evaluating wildlife habitat. These data include a complete species list, cover by species, and median height of each species. These data are gathered as a part of Eagle Lake Field Office's land health assessment. Monitoring is developed to answer specific questions concerning sage-grouse habitat that will result in accurate implementation of the adaptive management cycle.

b. Wetland/riparian:

Evaluation to determine if wetlands/riparian areas are in proper functioning condition using the Riparian Functional Assessment (USDI 1994) is supplemented with a complete list of species present, cover by species, and median plant heights. These data are used as a comparison against habitat requirements provided in the literature and sage-grouse use. Management of wetlands and riparian areas for the production of succulent young leaves in late summer can pose a threat to the wetland itself. To insure that management of wetlands/riparian areas for sage-grouse does not adversely impact wetland/riparian health the Carex Working Group, working through a Cooperative Agreement with the Eagle Lake Field Office, is surveying several wetlands in varying states of condition to determine which vegetation species can act as indicators of healthy wetlands for future reference. This work will be completed during 2005, and used to guide monitoring activities. Wetlands/riparian areas will be monitored to establish treatment schedules within the adaptive management cycle which will insure continued wetland/riparian health and support of brooding sage-grouse.

Appendix K: Northeast California Sage-Grouse Working Group and Technical Sub-Committee Members

Northern California Sage-Grouse Working Group

Agency / Group and Representatives

Livestock Operator	Todd Swickard
Livestock Operator	Dennis Wood
Livestock Operator	Darrell Wood
Livestock Operator/Farm Bureau	Daren Hagata
Livestock Operator	Martha Miller
Farmer	Ed Krantz
UC Cooperative Extension	David Lile
Northeast California Resource Advisory Council	Gerald Nordstrom
Lassen County Board of Supervisors	Jack Hanson
California Department of Fish and Game	Frank Hall
	Mary Nordstrom
Nevada Department of Wildlife	
Bureau of Land Management	Don Armentrout
	Melissa J. Nelson
	Paul Schimdt
	Elias Flores, Jr.
	Roger Bryan
Washoe - Modoc Experimental Stewardship Advisory Committee	William (Bill) Phillips

Technical Sub-Committee

Agency / Group and Representatives*

UC Cooperative Extension	David Lile
California Department of Fish and Game	Frank Hall
	Mary Nordstrom
Nevada Department of Wildlife	
Natural Resources Conservation Service	Ceci Dale-Cesmat
Bureau of Land Management	Melissa J. Nelson
Livestock Operator	Todd Swickard
Farmer	Ed Krantz
Northeast California Resource Advisory Council	Gerald Nordstrom

* Persons with special technical skills will be consulted as needed.

Appendix L: Incentive Programs for Sage-Grouse Habitat Enhancement on Private Lands

Developing actions for sage-grouse conservation on private land needs the full support of the landowner and won't work without it. The most important type of incentive for private landowners is to involve them early in the planning process, and to include their suggestions and interests. Ask them what they think would work for them on their land with their operation. This done early and sincerely is the first step, followed by continued involvement.

The goals for sage-grouse conservation on private lands in the Buffalo - Skedaddle CS are focused on landowner education and incentives, which differs from the administrative approach taken on the public lands. Regulations on public lands managed as part of an allotment could easily influence how the landowner uses the associated private lands. For instance, the landowner with restrictions on their allotments may choose to attempt more intensive agriculture on the private lands, which is likely to fail and create further habitat loss. The Buffalo - Skedaddle CS attempts to find a workable balance for sage-grouse conservation on both public and private lands.

Educational information is available to landowners concerning the habitat needs of sage-grouse: The Nevada Wildlife Federation publishes a booklet entitled *"Enhancing Sage-grouse Habitat…A Nevada Landowners Guide"*. A copy of the booklet is available on-line at www.nvwf.org/sagegrouse/guide or by calling (775) 885-0405 or (775) 677-0927.

Farm Bill 2000: The Natural Resources Conservation Service (NRCS) is a federal agency under the United States Department of Agriculture. www.nrcs.usda.gov/programs/ NRCS offers landowners financial, technical, and educational assistance to implement conservation practices on privately owned land. Using this help, farmers, ranchers, and forest landowners apply practices that reduce soil erosion, improve water quality, and enhance cropland, forestland, wetlands, grazing lands, and wildlife habitat. Conservation plans are developed with individual landowners to suit their specific situation. The landowner is the decision-maker, but conservation practices must meet NRCS standards and specifications. Participation in a cost-share program is not required to receive assistance. Landowners interested in technical assistance or cost-share programs are encouraged to contact the local NRCS field office for assistance. Contact Jim Gifford, Resource Specialist jim.gifford@nv.usda.gov. Listed below are the two most utilized NRCS programs.

- Environmental Quality Incentives Program (EQIP) was reauthorized in the Farm Security and Rural Investment Act of 2002 (Farm Bill) to provide a voluntary conservation program for farmers and ranchers that

promotes agricultural production and environmental quality as compatible national goals. EQIP offers financial and technical help to assist eligible participants install or implement structural and management practices on eligible agricultural land.

- Wildlife Habitat Incentives Program (WHIP) is a voluntary program for people who want to develop and improve wildlife habitat primarily on private land. Through this program the Natural Resources Conservation Service (NRCS) provides both technical assistance and up to 75 percent cost-share assistance to establish and improve fish and wildlife habitat. WHIP agreements between NRCS and the participant generally last from 5 to 10 years from the date the agreement is signed. WHIP has proven to be a highly effective and widely accepted program across the country. By targeting wildlife habitat projects on all lands and aquatic areas, WHIP provides assistance to conservation minded landowners who are unable to meet the specific eligibility requirements of other USDA conservation programs.

County Tax Sale property: Under certain circumstances a Nevada county can acquire parcels of privately owned land that individuals have decided to stop paying taxes on. The property to be acquired must be within the boundaries of an adopted Open Space Plan. In Washoe County this tool for potential acquisition of Sage-grouse habitat is presently only available in the Pah-Rah Population Management Unit (PMU) and a portion of the Virginia Range PMU. Contact Bill Whitney at Washoe County Department of Community Development. bwhitney@mail.co.washoe.nv.us

Conservation Easements: A conservation easement is a legal agreement a property owner makes to restrict the type and amount of development that may take place on his or her property. Each easement's restrictions are tailored to the particular property and to the interests of the individual owner. The purchaser/recipient is required to make periodic inspections to assure the conditions of the easement are being applied. For properties where long term protection is important but where private ownership and management make sense, easements can be the right tool. The easement can be donated by the landowner (usually with a tax benefit for the value of development that is precluded), or purchased by a public or non-profit entity. Presently, easements may not be a popular option for most landowners simply because there is a critical lack of information for them to feel confident in what the "fair" value of the easement actually is and any type of regulatory tool that includes a "perpetuity" clause is not likely to be popular with private landowners. Contact Roy Leach at Nevada Division of Wildlife. rleach@ndow.org

The **Endangered Species Act** includes components that can be used as incentive mechanisms for landowners. Most importantly, these include contractual assurance agreements. These essentially specify what land use

practices the landowner will adhere to in return for assurance that the land will continue to be used for production purposes. Getting these agreements in place assures the landowner that there will be no changes in their use of the land. These are likely to be important incentives for traditional ranchers. There needs to be adequate support for landowners to negotiate these agreements with the U S Fish and Wildlife Service and the time to negotiate these agreements is sooner than later. Laurie Sada is the contact at (775) 861-6300. www.USFWS.gov

The **United States Fish & Wildlife Service** Joint Venture programs, traditionally directed at wetlands improvement, have expanded to include all birds. Small grants of $10,000-$50,000 are available for habitat improvement. Applications for these funds require partnerships and shared costs. The improvements should be tied to increased numbers of Sage-grouse. Tina Nappe, tnappe@nvbell.net is a member of the small grant Joint Venture program for Nevada; Laurie Sada is the contact for the Partnership program, phone: (775) 861-6300. Information on grants and partnerships is available at www.USFWS.gov.

Southern Nevada Public Lands Management Act (SNPLMA) is one of the tools that could be used to purchase private properties or potential conservation easements for sage-grouse habitat conservation. SNPLMA is a source of funding for Nevada created by the sale of federal lands (BLM) in Clark County. While the majority of the revenue generated is stipulated for expenditure in Clark County, a small percentage of the proceeds are available to purchase "environmentally sensitive" properties statewide. All proposals submitted for SNPLMA acquisition require the landowner's consent, involvement of a federal agency partner and endorsement by the local government. www.nv.blm.gov/snplma Contact Tina Nappe at tnappe@nvbell.net

Q1 - **Conservation and Natural Resource Protection Bond** was passed by the voters of Nevada in November 2002. This bond provides $27.5 million for the Nevada Division of Wildlife to enhance, protect, and manage wildlife and wildlife habitat, $20 million for local governments and $15 million for nonprofit conservation organizations to acquire land and water to protect and enhance wildlife habitat critical properties (both require 50% match). Purchase of conservation easements is allowable under this bond. Contact Pam Wilcox at Nevada Division of State Lands pwilcox@lands.nv.gov or Roy Leach at Nevada Division of Wildlife. rleach@ndow.org

National Fire Plan: This plan is the US Congress response to the severe wildfires of 2000 with the intent of reducing their impacts on rural communities and enhancing the firefighting capabilities in the future. The National Fire Plan assists in the implementation of five key areas: firefighting resources, rehabilitation and restoration, hazardous fuels reduction, accountability, and community assistance. In Nevada funding is administered through the Bureau

of Land Management and the Nevada Division of Forestry (NDF). In California funding is administered through the Bureau of Land Management. Where sage-grouse habitat improvement can also be tied to fuels reduction projects and Multi-Resource Stewardship, funding through the NDF or BLM may be available. (Contact: Jenny Scanland, NDF jennys@ndf.state.nv.us or Pat Murphy, Nevada BLM state office www.pmurphy@nv.blm.gov, California BLM mmorrill@ca.blm.gov .

Additional landowner incentive options for conservation of sage-grouse in California include the following which was excerpted and modified from a portion of the California Department of Fish and Game home page http://www.dfg.ca.gov/habitats/private.html

Conservation Banking: A Conservation Bank (may also be called a Mitigation Bank) is a biological bank account. Instead of dollars in the bank, the "bank" owner has biological mitigation credits to sell to developers. Under state and federal laws, development projects that propose to remove or harm biological resources must assess the level of impact. If judged to be significant, those impacts must be compensated for. One means of doing so is through establishment of conservation banks which attempt to set aside larger blocks of natural habitat needed for long term conservation. A recent report on conservation banking is available. Contact the Department of Fish and Game for more information.

Enhancement and Management of Fish and Wildlife and their Habitat on Private Lands (PLM program): The PLM program offers ranchers and farmers an opportunity to increase their profits by improving habitat for wildlife. Through 1996, there were 52 PLM properties encompassing approximately 645,000 acres. The economic incentive provided is in the form of offering fishing and hunting opportunity to the public beyond the traditional seasons, and issuing tags or permits directly to individuals you allow to hunt or fish on your land. The landowner sets and collects whatever access and service fees they wish. The landowner pays a fee to be in the program, pays for the tags/permits, develops an approved management plan, and implements the agreed upon wildlife habitat improvements. While most of the habitat enhancements under this program are for increased hunting opportunity for big game animals, many of the enhancements and protections can be designed to benefit other species of wildlife including sage- grouse.

The specific laws for the program are described in *Sec 3400-3409 Fish and Game Code*. Contact the Department of Fish and Game's PLM coordinator for more information and a brochure on the program (916) 653-7203.

The following 3 are primarily wetlands programs but could have some application to sites that include habitat for sage-grouse populations, especially when brood-rearing in summer:

- The *California Wetlands Information System* is a program of the California Resources Agency. The Wetlands Information System is designed to provide comprehensive wetlands information to the general public, the educational community, and government agencies. It is a compilation of public and private sector information, including maps, environmental documents, agency roles in wetlands management, restoration and mitigation activities, regulatory permitting, and wetland policies.

- The Department's role in wetlands management is to meet the wetlands protection, restoration, and enhancement goals of the Intermountain Habitat Joint Venture, a component of the North American Waterfowl Management Plan. These habitat goals are achieved on state-administered wildlife areas and on private land enrolled in the Department's voluntary wetland incentive or easement program:

C*alifornia Waterfowl Habitat Program:* This program pays private landowners for following practices in department approved management plans. Activities include increasing food supplies, providing optimal water depth for foraging birds, and offering summer wetlands for breeding birds.

 A guidebook- *Farming for Wildlife: Voluntary Practices for Attracting Wildlife to your Farm* is a collaborative effort and wonderful resource available from the Department.

- The *Inland Wetlands Conservation Program* of the Wildlife Conservation Board has made significant contributions toward achieving the specific objectives outlined in the CVHJV Plan. These contributions will ultimately result in the restoration, enhancement and protection of critical habitat necessary to support the millions of migratory waterfowl dependent upon the Central Valley of California. The language establishing the program is available. A similar program, focusing specifically on riparian areas is the WCB's recently established California Riparian Habitat Conservation Program (CRHCP).

- *Natural Communities Conservation Program* (NCCP): The Natural Community Conservation Planning (NCCP) program of the California Resources Agency and the Department of Fish and Game is an unprecedented effort by the State of California, and numerous private and public partners, that takes a broad-based ecosystem approach to planning for the protection and perpetuation of biological diversity. An NCCP identifies and provides for the regional or area-wide protection of plants, animals, and their habitats, while allowing compatible and appropriate economic activity. The program seeks to involve public and private landowners/administrators in large-scale conservation planning efforts to ensure the long-term integrity of natural communities and accommodate compatible land use. The pilot program involves coastal sage scrub habitat in

Southern California, home to the California gnatcatcher and approximately 90 other potentially threatened or endangered species.

- *Riparian Habitat Joint Venture:* RHJV is a statewide, cooperative endeavor to enhance, conserve, and restore riparian habitats. It is part of Partners in Flight, an international bird conservation effort. The RHJV program works to provide information and education on riparian conservation projects, restoration efforts, and local planning efforts in working towards a goal to increase the amount of riparian habitat for wildlife, in particular songbirds. Contact the Department of Fish and Game's RHJV coordinator for more information.

- The widely known *Williamson Act* lands program also supports maintaining agricultural lands and wildlife habitat in California by providing incentives decreasing property tax liability for private land owners.

- *National Fish and Wildlife Foundation*: NFWF supports projects that conserve the nation's wetland resources, in particular habitat for wetland-dependant fish and wildlife. NFWF generally funds three program types: acquisition of wetland resources, both in fee-title and conservation easements; wetland restoration and enhancement projects, particularly those on private lands; and applied research on wetland management techniques, restoration or enhancement practices, or other wetlands-related applied conservation.

- *Partners for Wildlife:* A program in the U.S. Fish and Wildlife Service that started in the Midwest. This link provides some background, but contact the Fish and Wildlife Service for information related to California. Also, a map and text description of USFWS facility locations is online.

- *The Wildlife Habitat Incentives Program* (WHIP) is a component of the 1996 USDA Farm Bill and is voluntary program for people who want to develop and improve wildlife habitat on private lands. It provides both technical assistance and cost sharing to help establish and improve fish and wildlife habitat.

- This link provides information about Conservation Programs offered by the USDA's *Farm Service Agency* along with links to associated news releases and Program Fact Sheets. One program, the *Conservation Reserve Program* (CRP) is the Federal Government's single largest environmental improvement program -- and one of its most effective. Today, the CRP is safeguarding millions of acres of American topsoil from erosion, increasing wildlife habitat, and protecting ground and surface water by reducing water runoff and sedimentation. Countless lakes, rivers, ponds, and streams are cleaner and more vital in part because of the CRP.

Conservation Easements and Acquisition through the Wildlife Conservation Board: In close cooperation with the California Department of Fish & Game, this board provides oversight for acquisitions and easements to

protect important and threatened wildlife habitats in California. Acquisitions are generally more common than easements and most have targeted listed species or complex habitats with many high value species (i.e., coastal wetlands, critical habitats, etc. Funding of various bond measures passed under the California Initiative process intermittently provide very large increases in the funds available for such easements and acquisitions.

Specific types of incentives for landowner that will be sought within the Buffalo - Skedaddle PMU include:

1. Conservation Easements
   Nevada Landowner Incentive Program (LIP)
      (note: 1 project is now underway to protect 4 lek sites in California by LIP easements)
   California Wildlife Conservation Board (WCB)

2. Incentives for maintenance (protection) and management (enhancement)
   California Private Lands Wildlife Management Program (PLM)
   Farm Bill 2000:
      EQIP Program
      WHIP Program
   Section 6 funding under the USFWS administered Endangered Species Act
   USFWS Joint Venture Program
   National Fire Plan
   Conservation Banking options (CDFG)
   California Wetlands Information System
   California Waterfowl Habitat Program
   Inland Wetlands Conservation Program (CDFG/WCB)
   Riparian Habitat Joint Venture (CDFG, under Partners in Flight (PIF)
   Williamson Act (Lassen County / CDFG)
   National Fish and Wildlife Foundation (NFWF)
   Partners for Wildlife
   WHIP (see above but under the 1996 Farm Bill)
   USDA Conservation Reserve Program (CRP)

3. Land Acquisition
   Land Exchange by state/federal agency at fair market value/willing seller basis.
   Acquisition by state/federal agency at fair market value/willing seller basis.
   County (Lassen or Washoe) acquisition/disposal from default property taxes.

4. Combinations of two or more above (easement, Incentives, Acquisition)
   Southern Nevada Public Lands Management Act (SNPLMA)
   Nevada Conservation and Natural Resources Protection Bond (Q1, 2002)
   Natural Communities Conservation Program (NCCP/CDFG)

VIII. MEMORANDUM OF UNDERSTANDING/CONSERVATION AGREEMENT

This Memorandum of Understanding/Conservation Agreement (MOU/CA) is made between California Department of Fish and Game, an agency under the California Resource Agency; the Nevada Department of Wildlife, an independent state agency; the Bureau of Land Management, an agency of the U.S. Department of the Interior; the U.S. Fish and Wildlife Service, an agency of the U.S. Department of the Interior; Lassen County, CA; and Individual Property Owners. The above entities are collectively known as "the Parties."

Recitals

WHEREAS, sage-grouse is a wildlife species endemic to sagebrush ecosystems in the Buffalo - Skedaddle Population Management Unit (PMU); and

WHEREAS, a reduction in the distribution and number of sage-grouse populations across the West caused the USFWS to be petitioned to list the species as endangered under the Endangered Species Act of 1973, as amended (ESA); and

WHEREAS, the USFWS has determined the petition to list sage-grouse warrants further investigation; and,

WHEREAS, the conservation of sage-grouse requires a coordinated effort of all the Parties; and

WHEREAS, it is the intent of the Parties to prevent the need to list and promote the recovery and conservation of sage-grouse through coordinated management and cost sharing; and

WHEREAS, the Northeast California Sage-Grouse Working Group (NCSGWG) and Washoe-Modoc Sage-Grouse Working Group (WMSGWG) was formed to participate in the preparation of a Conservation Strategy (CS) for the for the conservation and recovery of sage-grouse; and

WHEREAS, the Technical Sub-Committee (TSC) was formed to implement the CS on-the-ground; and

WHEREAS, the CS coordinates conservation efforts between the Parties to adaptively manage the species and coordinate monitoring to provide for the conservation and recovery of this species; and

WHEREAS, the actions described within the CS for sage-grouse are grounded in a rigorous review and analysis of the knowledge of this species and the Buffalo - Skedaddle PMU; and

WHEREAS, the key aspect of the biology of sage-grouse is their dependency upon specific leks for reproduction and healthy sagebrush ecosystems, which makes it necessary to consider both occupied, historical, and potentially suitable habitat for management; and

WHEREAS, the role of the private landowners in the stewardship of sage-grouse is crucial and this critical role is reflected within the CS and this MOU/CA; and

WHEREAS, the Parties desire to formalize their commitments to implementation of the CS.

NOW, THEREFORE, the Parties agree as follows:

A. Purposes

1. To facilitate the implementation of conservation measures and management activities identified in the CS to provide long-term conservation benefits and achieve long-term survival of sage- grouse and healthy sagebrush ecosystems; and

2. To facilitate voluntary cooperation between the Parties to provide long-term protection for sage-grouse and their habitat; and

3. To describe a process to be undertaken if a Party is unable to perform a conservation measure or management activity set forth in the CS; and

4. To set forth the miscellaneous provisions of the Parties' agreement to implement the CS.

B. Commitment To The Sage-Grouse Conservation Strategy

1. Subject to the provisions of this MOU/CA, each Party agrees to implement the CS, including but not limited to actions specified for that Party in Table 13 for fiscal years 2006, 2007, and 2008 and the adaptive management strategy outlined in Chapter II.G of the CS. Table 13 will be reviewed and revised after 5 years. Each Party shall also designate individuals to serve on the NCSGWG and TSC. Any action taken by an individual Party must be consistent with that Party's governing authority and decision making processes.

2. The Parties incorporate by reference into this MOU/CA the sage-grouse CS, attached hereto as Exhibit 1, and any future revisions to that document pursuant to Paragraph G.7 of this MOU/CA.

C. Annual Reports

1. The TSC shall prepare all annual reports describing the status of sage-grouse and sagebrush ecosystems following each survey year. This report will be a primary source of resource information for decision making for entities involved in conservation efforts.

2. The report shall include the following information:

a. Number of population/lek complexes identified during the most recent survey.
b. Population numbers and persistence estimated during the most recent survey.
c. Copies of annual data sheets.
d. Graphical representation of the population trend.
e. Conservation activities undertaken in the previous year.
f. Recommended conservation activities for the upcoming year.
g. Number of projects allowed within potentially suitable habitat.
h. Number of significant disturbances to the species or its habitat inconsistent with the CS and subsequent responses.
i. Brief summary of any reported research findings.
j. Estimate of staff time spent in past year.

3. When preparing the annual report, the TSC shall, among other things, explore the following questions:

a. To what degree is each goal of the CS being achieved?
b. Are conservation efforts effective in conserving the species and the lek/sagebrush ecosystem dynamic?
c. Should the monitoring scheme be altered and why?
d. Should management activities be changed and why?
e. What regulatory changes should be made to ensure the survival of the species?
f. What research questions are important to answer?

4. The TSC's production of the annual report and data analysis of the 2004 survey data shall initiate the adaptive management process described in the CS.

5. The TSC shall also develop a list of recommended actions to be to be undertaken in each successive year by each land management agency, State Wildlife Agency and regulatory agency that are integral to the conservation effort. This list shall be prioritized in order of importance of protecting the species. Each recommended action item shall include a rough cost, schedule, and rationale to allow the NCSGWG to make decisions or recommendations to Governing Authorities for the coming year's work program.

6. To the extent permitted by law, all Parties agree to provide to each other all relevant information in its possession or control related to implementation of the CS within 30 days of a request by another party.

7. The TSC shall prepare the annual report prior to December 1 of each year. The NCSGWG shall approve the annual report or request specific modifications within 60 days of the TSC delivering the report to the Parties. BLM, CDFG, and NDOW shall post an electronic copy of the final report on its web page for general access.

D. Funding

1. The Parties warrant necessary funds exist to implement the CS for Fiscal Year 2006-2007 and commit to seek funding necessary to implement the CS in succeeding years. However, implementation of this MOU/CA and the CS is subject to the requirements of the Anti-Deficiency Act and availability of appropriate funds. Nothing in this MOU/CA will be construed by the Parties to require obligation, appropriation, or expenditure of any money from the U.S. Treasury or from state or local funds. Any Party will promptly notify the Parties of any material changes in a Party's financial ability to fulfill its commitments.

2. This instrument is neither a fiscal nor funds obligation document. Any endeavor or transfer of anything of value involving reimbursement or contribution of funds between the Parties to this instrument will be handled in accordance with applicable laws, regulations, and procedures including those for Government procurement and printing. Such endeavors will be outlined in separate agreements that shall be independently authorized by appropriate statutory authority. This instrument does not provide such authority. Specifically, this instrument does not establish authority for noncompetitive award to the cooperator of any contract or other agreement. Any contract or agreement for training or other services must fully comply with all applicable requirements for competition.

E. Enforceability of This MOU/CA

1. Successful implementation of the MOU/CA, CS, and adaptive management process should remove the threats to the species and ensure the long-term survival of sage-grouse by maintaining and enhancing existing and

historical habitat in the Buffalo - Skedaddle PMU and integrating new information on the biology of the species into future conservation and management activities. As a result, the need to list the species under the ESA should be avoided. If conservation and management practices are effective in removing the threats and long-term protection of the species and its habitat are achieved, the USFWS may remove the sage-grouse from candidate status under the ESA. When or if it becomes known that there are threats to the survival of sage-grouse that are not or cannot be resolved through the CS, the USFWS may choose to resign candidate status, an appropriate listing priority, and list the species. The sole consequence of failure by a Party or Parties to implement this MOU/CA shall be a consideration by the USFWS to list the greater sage-grouse under the ESA if it is not already done so.

2. Without limiting the applicability of rights granted to the public pursuant to any law, this MOU/CA or the CS shall not create any right or interest in the public, or any member thereof, as a third-party beneficiary hereof, nor shall it authorize anyone not a Party to this MOU/CA to maintain a suit for enforcement of the MOU/CA or CS, personal injuries or damages. The duties, obligations, and responsibilities of the Parties to this MOU/CA with respect to third parties shall remain as imposed under existing law.

F. Duration of MOU/CA and Termination Clause

1. This MOU/CA shall terminate 10 years from the date of the last signature of the Parties hereto ("the initiating date"). The Parties shall meet and assess this MOU/CA after 5 years from the initiating date. After this 5-year meeting, a Party may affirmatively withdraw from the MOU/CA. If more than one party remains, this MOU/CA shall automatically extend for the remainder of the 10-year term.

2. If any Party determines that some portion of the CS cannot be carried out by their agency as a Party to the MOU/CA, then that Party must notify other Parties in writing within 60 days after their knowledge of their inability to carry out action. Within that same time frame, the remaining Parties will meet to discuss alternatives to the implementation of the unfulfilled action.

3. Any Party may suspend or terminate its participation in this MOU/CA and CS by providing 90 days written notice to all other Parties. Suspension or termination by one or more Parties shall not alter this MOU/CA between the remaining Parties.

G. Miscellaneous Provisions

1. Notices

Any notice permitted or required pursuant to this MOU/CA or CS shall be in writing, delivered personally to the appropriate persons listed in Section III.A hereto, or shall be deemed to be given five (5) days after deposit in the United States mail, certified and postage prepaid, return receipt requested, and addressed as follows, or at such address any Party may from time to time specify to the other Parties in writing. Notices may be delivered by facsimile or other electronic means, provided that they are also delivered personally or by certified mail. Notices shall be transmitted so that they are received within the specified deadlines.

2. Entire agreement

This MOU/CA, together with the CS, constitutes the entire agreement among the Parties. It supersedes any and all other agreements, either oral or in writing, among Parties with respect to the subject matter hereof and contains all the covenants and agreements among them with respect to said matters, and each Party acknowledges that no representation, inducement, promise or agreement, oral or otherwise, has been made by any other party or anyone acting on behalf of any other party that is not embodied herein.

3. Elected officials not to benefit

No member of or delegate to the U.S. Congress or California or Nevada legislatures shall be entitled to any share or part of this MOU/CA, or to any benefit that may arise from it.

4. Relationship to Legal Authorities

a. The terms of this MOU/CA and the CS shall be governed by and constructed in accordance with the federal ESA, the California ESA (CESA), the Nevada Revised Statutes (NRS), and other applicable federal and state laws.

b. Nothing in the MOU/CA or CS is intended to limit the authority of the USFWS, CDFG, NDOW, and BLM to seek penalties or otherwise fulfill their responsibilities under the ESA, CESA, NRS, and CFR Code, respectively. Moreover, nothing in the MOU/CA or CS is intended to limit or diminish the legal obligations and responsibilities of the USFWS, CDFG, NDOW, and BLM as agencies of the federal and state governments. Nothing in this MOU/CA or CS limits the right or obligation of any state or private entity to engage in appropriate consultation or permitting process required under any

applicable federal or state law; however, it is intended that the rights and obligations of the Parties under the MOU/CA and CS may be considered in any consultation affecting a Party's use of specified lands.

5. Successors and assigns

This MOU/CA and each of its covenants and conditions shall be binding on and shall insure to the benefit of the Parties and their respective successors and assigns. Assignment or other transfer of the MOU/CA shall be governed by the USFWS, CDFG, NDOW, and BLM regulations in force at the time.

6. Public documents

Information provided to any governmental agency pursuant to this MOU/CA and CS may be subject to release to members of the public under either state or federal law including but not limited to information furnished to the USFWS under the Freedom of Information Act (5 U.S.C. 552).

7. Modification

The MOU/CA and CS may be modified by mutual written consent of the Parties.

8. Participation in similar activities

This instrument in no way restricts the Parties from participating in similar activities with other public or private agencies, organizations, and individuals.

9. No regulatory approvals

Neither this MOU/CA nor CS constitutes regulatory approval by any Party of any projects mentioned in the MOU/CA or CS. All projects and actions must follow the otherwise applicable regulatory process for all necessary permits or approvals.

IN WITNESS WHEREOF, the Parties hereto have caused this agreement to be executed as of the day and year first written above.

CALIFORNIA DEPARTMENT OF FISH AND GAME

By: _____ _____
Donald Koch, Regional Manager Date

NEVADA DEPARTMENT OF WILDLIFE

By: _____ _____
Terry Crawforh, Director Date

U.S. FISH AND WILDLIFE SERVICE

By: _____ _____
Robert Williams, Field Supervisor Date
Nevada Fish and Wildlife Office

USDI BUREAU OF LAND MANAGEMENT

By: _____ _____
Dayne Barron, Field Manager Date
Eagle Lake Field Office

By: _____ _____
Gail Givens, Field Manager Date
Winnemucca Field Office

By: _____ _____
Owen Billingsley, Field Manager Date
Surprise Field Office

By: _____ _____
Tim Burke, Field Manager Date
Alturas Field Office

By: _____ _____
Gerald Nordstrom Date
Northeast California Resource Advisory Council

USDA NATURAL RESOUCES CONSERVATION SERVICE

By: _____ _____
Ceci Dale-Cesmat, District Conservationist Date

LASSEN COUNTY

By: _____ _____
Lloyd Keefer, Chairman Date
Board of Supervisors

By: _____ _____
Rob Hill, Chairman Date
Fish and Game Commission

By: _____ _____
Daren Hagata Date
Lassen County Farm Bureau

UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

By: _____ _____
David Lile, Natural Resources/Livestock Advisor Date
Cooperative Extension, Lassen County

PRIVATE INTERESTS

By: _____ _____
Todd Swickard, Livestock Operator Date

By: _____ _____
Jack Hanson, Livestock Operator Date

By: _____ _____
Martha Miller, Livestock Operator Date

By: _____ _____
Dennis Wood, Livestock Operator Date

By: _____ _____
Darrell Wood, Livestock Operator Date

By: _____ _____
Daren Hagata, Livestock Operator Date

By: _____ _____
Ed Krantz, Farmer Date

By: _____ _____
Bill Phillips, Retired Date

MODOC COUNTY

By: _____ _____
Delbert Craig, Modoc County Fish and Game Commission Date

III.A. Parties

The following entities and individuals are collectively referred to as the Parties:

California Department of Fish and Game (CDFG)
Region 1
601 Locust Street
Redding, CA 96001

Nevada Department of Wildlife (NDOW)
State Headquarters Office
1100 Valley Road
Reno, NV 89512

U.S. Department of the Interior (USDI)
Fish and Wildlife Service, Nevada Fish and Wildlife Office (USFWS)
1340 Financial Boulevard, Suite 234
Reno, NV 89502

U.S. Department of the Interior (USDI)
Bureau of Land Management (BLM)
Eagle Lake Field Office
2950 Riverside Drive
Susanville, CA 96130

Bureau of Land Management
Winnemucca Field Office
5100 E. Winnemucca Blvd.
Winnemucca, NV 89445

Bureau of Land Management
Surprise Field Office
602 Cressler Street
Cedarville, CA 96104

Bureau of Land Management
Alturas Field Office
708 West 12th Street
Alturas, CA 96101

Lassen County
Board of Supervisors
221 S. Roop Street
Susanville, CA 96130

U.C. Cooperative Extension
707 Nevada Street
Susanville, CA 96130

United States Department of Agriculture
Natural Resource Conservation (NRCS)
170 Russell Avenue, Suite C
Susanville, CA 96130